

[Organization logo]

[Organization name]

Commented [9A1]: All fields in this document marked by square brackets [] must be filled in.

PROCEDURE FOR PRODUCTION OF METALS

Commented [9A2]: If you want to find out more about the product realization process, see:

- article: ISO 9001:2015 clause 8.5 Product realization – Practical examples for compliance

<http://advisera.com/9001academy/blog/2015/11/03/iso-90012015-clause-8-5-product-realization-practical-examples-for-compliance/>

- free online course: ISO 9001 Foundations Course

<http://training.advisera.com/course/iso-90012015-foundations-course/>

Commented [9A3]: Adapt to the existing practice in organization.

Code:	
Version:	0.1
Created by:	
Approved by:	
Date of version:	
Signature:	

Distribution list

Commented [9A4]: This is only necessary if document is in paper form; otherwise, this table should be deleted.

Copy No.	Distributed to	Date	Signature	Returned	
				Date	Signature

Change history

Date	Version	Created by	Description of change
	0.1	9001Academy	Basic document outline

Table of contents

1. PURPOSE, SCOPE AND USERS	3
2. REFERENCE DOCUMENTS	3
3. PRODUCT REALIZATION	3
3.1. PRODUCT REALIZATION PLANNING.....	3
3.1.1. <i>Making production plan</i>	3
3.1.2. <i>Creating work order</i>	4
3.2. PRODUCTION PROVISION REALIZATION	4
3.2.1. <i>Metal casting</i>	4
3.2.1.1. <i>Internal purchase and receipt of raw materials</i>	4
3.2.1.2. <i>Melting</i>	5
3.2.1.3. <i>Molding</i>	5
3.2.1.4. <i>Surface cleaning</i>	5
3.2.1.5. <i>Finishing</i>	5
3.2.1.6. <i>Quality control</i>	6
3.2.1.7. <i>Packaging</i>	6
3.2.2. <i>Identification and traceability</i>	6
3.2.3. <i>Validation of production and service provision</i>	6
3.2.4. <i>Customer property</i>	6
3.2.5. <i>Control of changes</i>	7
3.2.6. <i>Product release, delivery and activities after delivery</i>	7
3.3. PRODUCT PRESERVATION	7
3.4. RESOLVING NON-CONFORMITIES.....	7
4. MANAGING RECORDS KEPT ON THE BASIS OF THIS DOCUMENT	8
5. APPENDICES	9

1. Purpose, scope and users

The purpose of this procedure is to describe the process of production of metals according to demanded quantity and deadlines, in line with the request for product quality, according to customer request.

The procedure is applied in realization of the production process.

Users of this document are persons responsible for the process of production in [organization name].

2. Reference documents

- ISO 9001:2015 standard clauses 8.5; 8.6
- Procedure for Document and Record Control
- Procedure for Competence, Training and Awareness
- Procedure for Purchasing and Evaluation of Suppliers
- Procedure for Design and Development
- Warehousing Procedure
- Procedure for Management of Nonconformities and Corrective Actions
- Procedure for Equipment Maintenance and Measuring Equipment
- [Work instruction manuals]

Commented [9A5]: List the names of instruction manuals used in this process.

3. Product realization

3.1. Product realization planning

3.1.1. Making production plan

According to demand of products and volume of production in previous period, [CEO] together with [job title] creates [Production Plan].

Commented [9A6]: E.g. Production Manager

[Production Plan] defines the following:

- Availability of information that defines product characteristics

[Redacted text]

Commented [9A7]: E.g. Product Specification, law and regulatory requirements, instructions, catalogues, etc.

Commented [9A8]: Delete if there is no cyclic production.

Commented [9A9]: E.g. Customer Request, Project Task, etc.

Commented [9A10]: Delete if organization doesn't perform this type of production.

- Defining resources for production

[job title] defines all resources needed for production, including human resources,

[Redacted text]

[Job title] creates the Quality Plan, which defines necessary activities of verification, monitoring, measuring, controlling and testing the product.

Commented [9A11]: E.g. Production Manager

- *Availability of* [redacted]

[Job title] is responsible for creation of work instructions for the following process activities:

Commented [9A12]: Work instructions are needed for more [redacted]

- *Usage of* [redacted]

[Job title] is responsible to ensure that all equipment is in operational condition and, on [job title]'s request, deliver evidence of execution of the Plan for Preventive Equipment Maintenance and records of calibration and repairs of measuring equipment.

Commented [9A13]: E.g. Maintenance Operator

Commented [9A14]: E.g. Production Manager

[redacted]

Commented [9A15]: E.g. Head of maintenance department

- *Conducting measuring and monitoring*

[Job title] must ensure availability of monitoring and measuring resources and define the [redacted]

Commented [9A16]: E.g. Production Manager, Technology Engineer, etc.

Commented [9A17]: Other records can be defined as addition to Quality Plan, e.g. records for monitoring temperature, pressure, humidity, etc.

3.1.2. *Creating work order*

For each individual batch, [job title] creates [Work Order] which defines all activities to be executed during production, responsibility for each activity, deadline, as well as raw materials needed.

[redacted]

Commented [9A18]: E.g. Production Plan, Customer Request, Project, etc.

Commented [9A19]: E.g. Production Manager

Commented [9A20]: Delete if clause 8.3 of ISO 9001:2015 is excluded.

Commented [9A21]: E.g. Warehouse Manager

Commented [9A22]: E.g. Production Manager

Commented [9A23]: E.g. Production Manager

3.2. **Production provision realization**

Production is executed in controlled working conditions, which implies compliance with all technical and technological requirements defined in documents necessary for the production process. If [redacted]

Commented [9A24]: All the steps and sub-sections can be edited or deleted in order to be aligned with the production process in the company.

Commented [9A25]: This refers to law and legal requirements.

3.2.1. *Metal casting*

3.2.1.1. *Internal purchase and receipt of raw materials*

According to the Production Plan and Production Registry, [job title] makes internal purchase. After [redacted]

Commented [9A26]: Adapt to organization practice.

3.2.1.2. Melting

[job title] transports raw materials (virgin material, external scrap, internal scrap, and alloying elements) to furnace where the material is being melted on [degrees]°C. The process includes

[redacted]

Commented [9A27]: Adapt to organization practice.

3.2.1.3. Molding

[job title] is responsible for making a pattern to shape of the desired part.

[job title] makes the pattern out of wax, wood, plastic or metal. The molds are constructed by [job title] using several different processes dependent upon the type of foundry, metal to be poured, quantity of parts to be produced, size of the casting and complexity of the casting. These mold processes include:

- Sand casting — Green or resin bonded sand mold.
- Lost-foam casting — [redacted]
- Investment casting — [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Commented [9A28]: Adapt to organization practice.

Commented [9A29]: Adapt to organization practice.

Commented [9A30]: Adapt to organization practice.

[job title] pours molten metal into the mold; the mold holds this material in shape as it solidifies. A metal casting is created.

Sections of the metal casting that did not form are treated as nonconformity and are resolved

[redacted]

3.2.1.4. Surface cleaning

After degating and heat treating, [job title] cleans the surface by blasting.

[redacted]

Commented [9A31]: Adapt to organization practice.

3.2.1.5. Finishing

Commented [9A32]: Adapt to organization practice.

[organization name]

The final step in the process of casting usually involves grinding, sanding, or machining the component in order to achieve the desired dimensional accuracies, physical shape and surface finish.

3.2.1.6. **Quality control**

After production, [job title] samples the products and conducts inspection to determine whether the produced parts meet product requirements defined in Product Specification. If the products pass the

Commented [9A33]: Adapt to organization practice.

3.2.1.7. **Packaging**

[job title] receives final products and sends them to packaging which is done by [describe the process].

Commented [9A34]: Adapt to organization practice.

Commented [9A35]: For example by hand or by using some machine.

3.2.2. **Identification and traceability**

3.2.3. **Validation of production and service provision**

[Job title] must conduct validation of all processes of production and service provision where it is not possible to conduct measurement, since product or service is being destroyed in the process.

Commented [9A36]: E.g. serial number, Work order ID, bar code, software ID, expiring date, production date, labeling, accounting documentation, etc.

Commented [9A37]: Delete if there are no processes that require validation; see Quality Manual.

Commented [9A38]: E.g. Welding – techniques for testing welding compactness don't give information about its strength, or when service provision is instant and prevents subsequent testing.

Where appropriate, as part of validation, [job title] must determine:

- Criteria for review and approval of process
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Commented [9A39]: This is entered in Quality Plan.

Commented [9A40]: This is entered in Quality Plan.

Commented [9A41]: This is done when previous validation didn't give expected results.

Commented [9A42]: Adapt to organization.

[Job title] creates records needed to provide evidence that realization processes and resulting products meet predefined requests.

3.2.4. **Customer property**

[Job title] is responsible for identification, verification, and protection of customer or sub-contractor

Commented [9A43]: This can be deleted if organization doesn't use Customer Property. See Quality Manual.

3.2.5. Control of changes

[job title] reviews and controls changes for production and service provision in order to ensure

3.2.6. Product release, delivery and activities after delivery

[Job title] is responsible for determining, at appropriate stages, by which degree the product requirements are met regarding Product Specification and customer requirements. If requirements are met, [job title]

[job title] ensures that the

[Job title] defines the extent of post-delivery activities that are required, considering:

- Statutory and regulatory requirements
- The potential undesired consequences associated with the products and services
- The nature, size and complexity of the products and services
- Customer requirements
- Customer feedback
- Delivery methods
- Delivery locations
- Delivery times
- Delivery conditions
- Delivery risks
- Delivery costs

Commented [9A44]: Adapt to organization's needs.

During post-delivery activities, [job title] is obligated to initiate correction of non-conformance using the Procedure for Managing Nonconformities and Corrective Actions for every non-conformity of product. If repair is executed within the warranty period, it is treated as non-conformity and dealt with as such.

3.3. Product preservation

[Job title] is responsible for preservation of product during production and internal transport of product and/or assembly parts.

Commented [9A45]: This should be deleted if organization is only service oriented.

Commented [9A46]: E.g. Production Manager

Commented [9A47]: E.g. Warehousing Manager

Commented [9A48]: E.g. Driver

3.4. Resolving non-conformities

If a non-conformity of process or product occurs, the person who discovered the non-conformity notifies [job title], who acts according to the Procedure for Control of Non-Conforming Product.

[organization name]

If the non-conformity can be resolved, the process is resumed; otherwise, [job title] stops the production process and acts according to the Procedure for Managing Nonconformities and Corrective Actions, but can't change technological parameters.

Commented [9A49]: E.g. Shift Leader

4. Managing records kept on the basis of this document

Record name	Code	Storage			Responsibility
		Retention time	Location	Protection	
Product Specification	PR.10.1	2 years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Record of Product/Service Conformance	PR.10.2	2years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Quality Plan	PR.10.3	2years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Notification to a Customer about Changes on his Property	PR.10.4	2years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Record of Traceability	PR.10.5	2 years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Production/Service Change Review Record	PR.10.6	2 years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]
Production Plan	PR.10.7	2 years	[office of Production Manager]	Records are stored in file cabinet [describe name/location]	[job title]

Commented [9A51]: Adapt the information in this column to the normal practice in your company.

Commented [9A50]: Adapt the information in this column to the normal practice in your company.

Commented [9A52]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A53]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A54]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A55]: This document is unnecessary if organization doesn't store and work with customer property.

Commented [9A56]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A57]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A58]: If the record is in electronic form, write the name of the folder on Production Manager computer.

Commented [9A59]: If the record is in electronic form, write the name of the folder on Production Manager computer.

[organization name]

Production Registry	PR.10.8	2 years	[office of Production Manager]	Records are stored in file cabinet [describe name/location	[job title]
---------------------	---------	---------	---------------------------------------	---	-------------

Commented [9A60]: If the record is in electronic form, write the name of the folder on Production Manager computer.

5. Appendices

- Appendix 1 – Product Specification
- Appendix 2 – Record of Product/Service Conformance
- Appendix 3 – Quality Plan
- Appendix 4 – Notification to a Customer about Changes on his Property
- Appendix 5 – Record of Traceability
- Appendix 6 – Production/Service Change Review Record
- Appendix 7 – Production Plan
- Appendix 8 – Production Registry