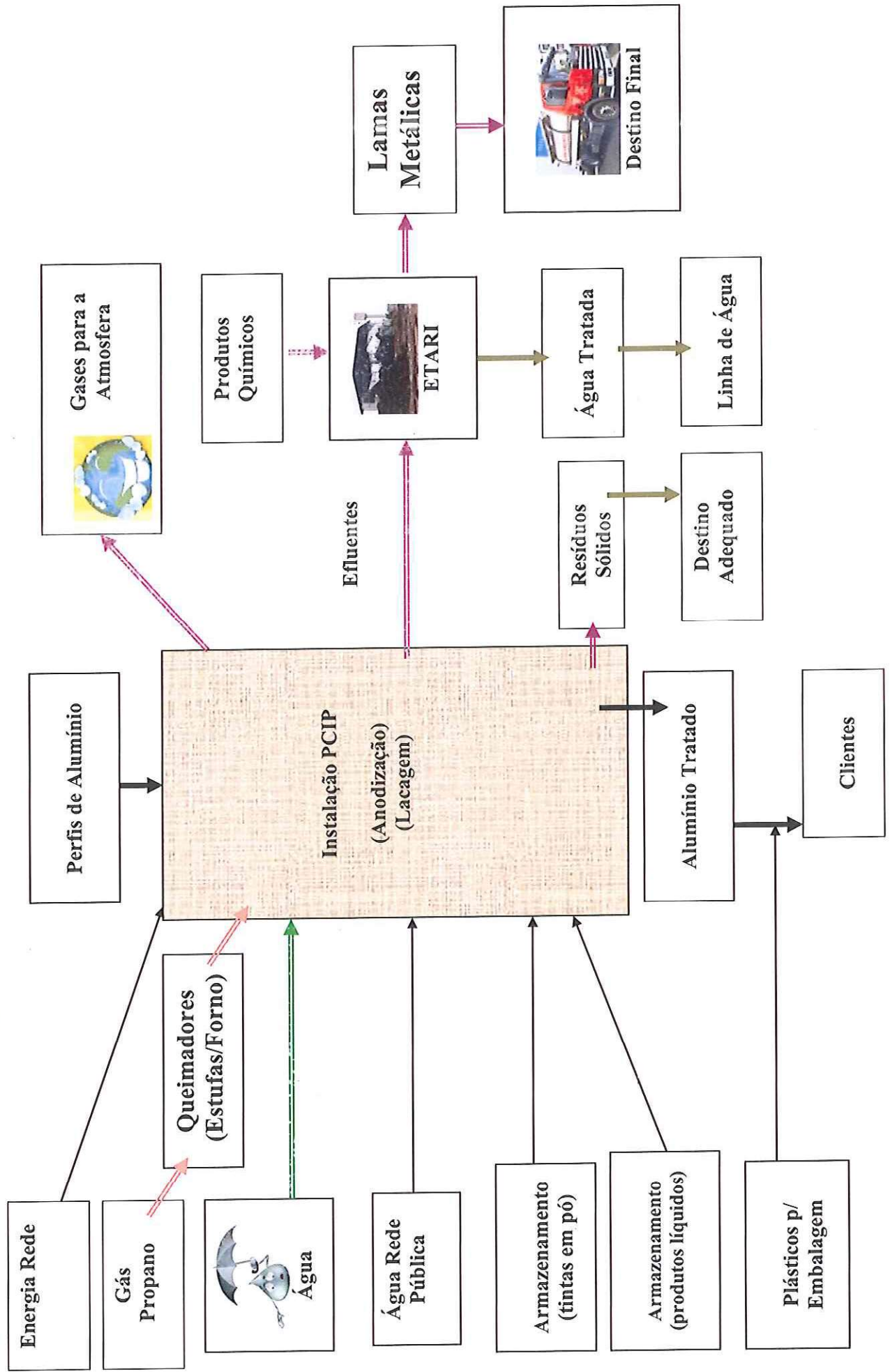


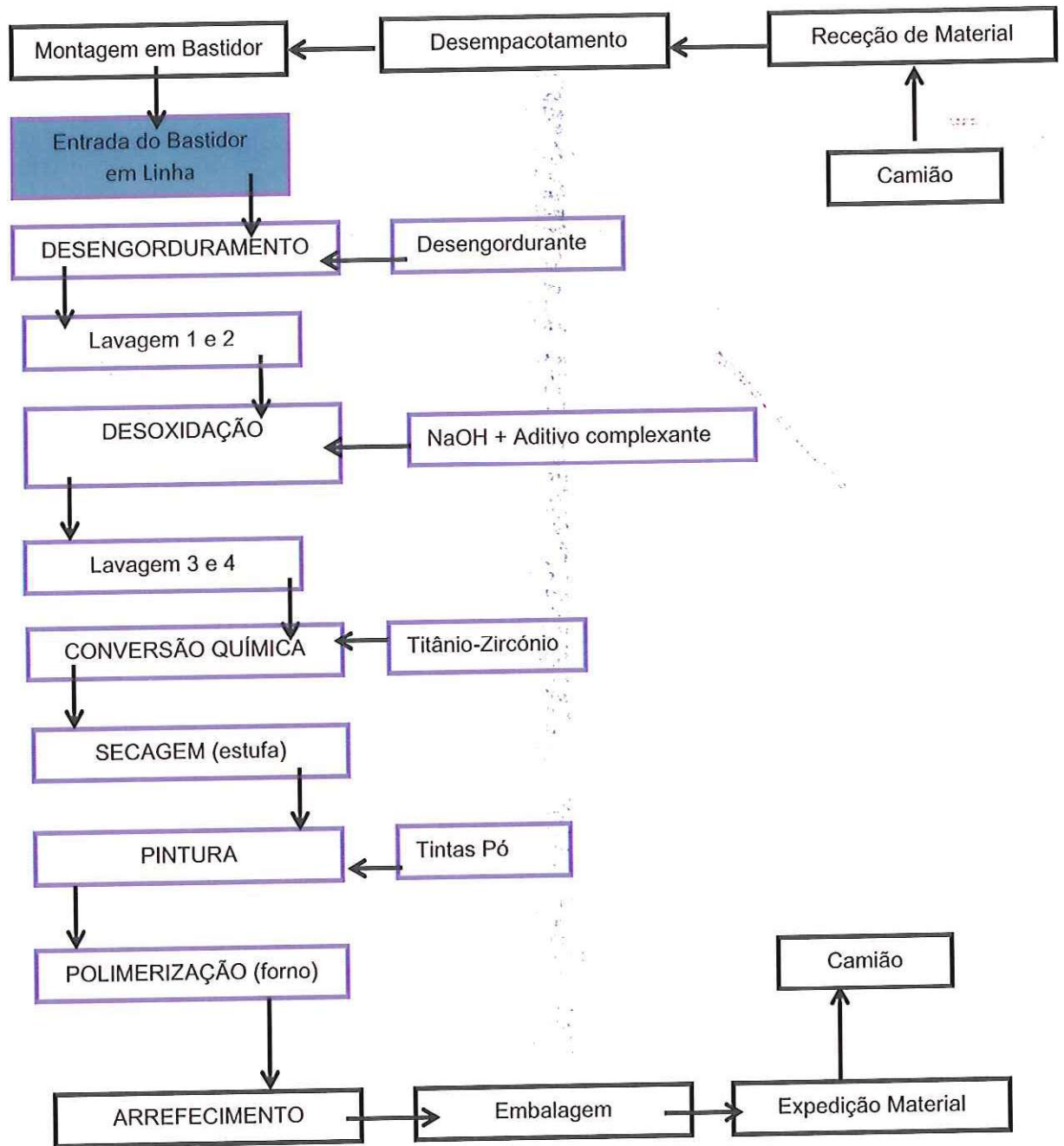
Anexo 3 – Processos de Produção

- Diagrama de Produção
- Fluxograma de Anodização
- Fluxograma de Lacagem
- Substituição Crómio

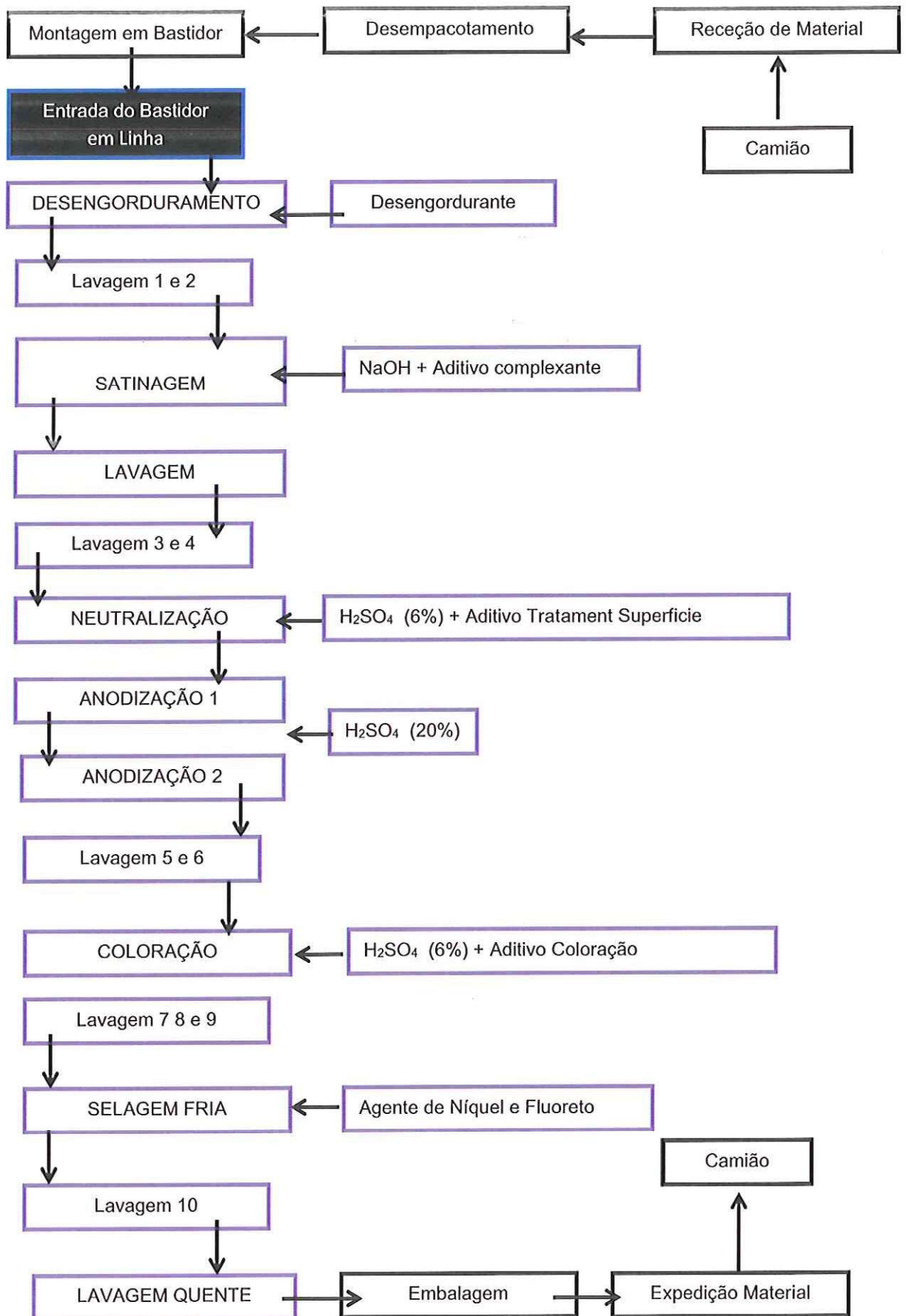
Diagrama Simplificado da Produção



FLUXOGRAMA DA LACAGEM



FLUXOGRAMA DA ANODIZAÇÃO



CERTIFICATE

for a CHEMICAL MANUFACTURER



hereby authorises

Chemetall GmbH
Trakehner Strasse 3
60487 Frankfurt am Main
Germany

to use the quality label in conformity with the
QUALICOAT 2021 Specifications, applicable from 1 January 2021
and only when used with QUALICOAT approved powder coating systems

Material:	PreTreatment
Pre-Anodising:	No
System Name:	Gardobond X 4707 No rinse

Approval No.:	A-024
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Date of Granting:	08.09.2003
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Valid until:	31.12.2021
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Zurich, 1 January 2021

QUALICOAT

M. C. Panam

Mohammed C. Panam
President



Sue C. C. Paredi

Sue C. C. Paredi
Managing Director





INSTRUÇÕES DE MONTAGEM, CONTROLO E MANUTENÇÃO DE BANHOS DE TRATAMENTO DE SUPERFÍCIES METÁLICAS

8º ESTÁGIO

Tanque N°8 – Conversão Isenta de Crómio 7 500 Litros

Produto: GARDOBOND X 4707 A
GARDOBOND X 4707 E15

Montagem: GARDOBOND X4707 A a 7,0 g/l = 52,5 kg

Parâmetros: Temperatura : ambiente
Tempo : 2 – 60 seg.
pH : 2,80 – 3,80
Condutividade : 600 – 1000 µS
Acidez Total : < 3,0
Camada : 2 – 10 mg/m² de Ti

Controlo: pH

Condutividade

Acidez Total

- Toma de 100 ml de banho
- Adicionar 3 - 4 gotas de Fenolftaleína
- Titular com Hidróxido de Sódio 0,1N até passagem de incolor a rosa.

Ao número de ml de Hidróxido de Sódio 0,1N consumidos corresponde a idêntico número de pontos de Acidez do banho.

Manutenção: pH

Adição de GARDOBOND X 4707 E15 por forma a manter o valor de pH e condutividade.

Rejeição: Parcial ou total em função dos contaminantes (AcT). Será recomendável manter uma renovação constante do banho. Para isso, não deixar escorrer em demasia as cargas, por forma a fazer algum arrasto de banho para a lavagem seguinte, sendo necessário repor o nível com DI.

Gardobond® X 4707

Chrome-free pretreatment for aluminium extrusion and die casting

Advantages:

- + Chrome-free, eco-friendly
- + Approved by GSB and Qualicoat, meets AAMA specifications
- + Excellent paint adhesion and corrosion protection
- + Ambient-temperature process
- + Easy-to-handle, low-maintenance process
- + Quantitative method for coating weight

Applications:

- Aluminium finishing and construction industry
- Aluminium profiles, cast and sheet material
- Magnesium applications



The eco-friendly Gardobond® X 4707 technology is a chrome-free pretreatment process for aluminium and magnesium substrates. Based on zirconium and titanium components it enhances corrosion protection and maximizes adhesion.

Results in AASS, CASS and filiform corrosion testings are excellent. Even under the harshest conditions, such as the 10 years GSB "Natural Weathering Test" in Hoek van Holland, Netherlands, profiles pretreated with Gardobond® X 4707 achieved the same good results as chromated profiles.

The technology holds GSB and Qualicoat approvals and complies with the requirements of AAMA.

Gardobond® X 4707

The eco-friendly Gardobond® X 4707 technology is a chrome-free pretreatment process for aluminium and magnesium substrates.

For many decades, hexavalent chrome-based processes have been the standard for aluminium pretreatment. However, more recently, chrome-based pretreatment processes have come under pressure for environmental as well as health and safety reasons.

The Gardobond® X 4707 technology works on aluminium and magnesium substrates and offers excellent paint adhesion and corrosion resistance in combination with current paint systems. It offers simplified waste water treatment and improves workers' safety and working hygiene.

The chrome-free process is suitable for rinse and no rinse processes as well as for short lines. A simple bath replenishment one time per shift or via dosing pump is sufficient. Increased process safety is ensured by a simple bath control (pH-value, fluoride-concentration or conductivity) and an easy quicktest for the pretreatment layer (X-ray fluorescence (XRF) gun, quantitative determination by photometer or qualitative determination).

Compliance with highest quality requirements:

- GSB (approval 304A)
- Qualicoat (A-62 rinse, A-24 no-rinse)
- AAMA

Application parameters:

- Bath make-up: 7 – 10 g/l (no rinse)
10 – 20 g/l (rinse)
- Bath temperature: 20 – 40 °C
- pH-value: 2.8 – 3.8
- Electrical conductivity: 500 – 2,000 µS/cm
- Treatment time: 30 – 60 seconds
- Application: dip, spray
- Drying: 60 – 170 °C
- Coating weight: 3 – 20 mg/m² Ti
3 – 20 mg/m² Zr

Corrosion and paint adhesion results:

	Cross Cut-Test after 240 h CH-Test	AASS-Test infiltration after 1008 h (mm)	Filiform-Test infiltration after 1008 h (mm)
Powder Paint, AA-5005-Sheet			
Gardobond® X 4707	Gt 0	≤ 1	≤ 1
Chromium VI	Gt 0	≤ 1	≤ 1
Powder Paint, AA-6060-Profiles			
Gardobond® X 4707	Gt 0	≤ 1	≤ 1
Chromium VI	Gt 0	≤ 1	≤ 1

Typical process sequence



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