

Pickling and passivation of austenitic stainless steel **(AISI 304/316/Duplex eq)**

The essential from our used standards: ASTM A380, ASTM A967, AMS 2700 & QQ-P35C

ASTM A380 / A380M

-The most comprehensive standard includes Pickling, cleaning and passivation of stainless

Recipes:

<i>Pickling:</i>	15-25 % HNO ₃ + 1-8 % HF,	by 21-60 °C	in min. 30 minutes
<i>Cleaning:</i>	6-25 % HNO ₃ + 1/2-8 % HF,	by 21-60 °C	time by need
<i>Passivation:</i>	20-50 % HNO ₃	by 10-30 °C	in 10-30 minutes!

ASTM A967-05

-The most common *Passivation standard*

Passivation Nitric 1:20-45 v% HNO₃+2,5w% Na₂Cr₂O₇ by 21-32 °C in min. 20 minutes

Passivation Nitric 2: 20-45 v% HNO₃ by 21-32 °C in min. 30 minutes

Passivation Nitric 3: 20-25 v% HNO₃ by 49-60 °C in min. 20 minutes

Passivation Nitric 4: 45-55 v% HNO₃ by 45-54 °C in min. 30 minutes

Passivation Nitric 5: Other combinations that pass the specified test requirements in std.A967

(**A967 Tests**, A:Water immersion, B:High humidity, C:Salt spray, D:Copper Sulfate, E: Ferroxyl, F:Free Iron)

AMS2700C

Aerospace Material Specification – The aerospace standard

Recipe:

(*Method 1, Type 1-5 is with added 2-3% Na₂Cr₂O₇ · 2H₂O in various temperatures*)

Passivation Method 1, Type 6: 25-45% HNO₃ by 21-32 °C in min. 30 minutes

Passivation Method 1, Type 7: 20-25% HNO₃ by 49-60 °C in min. 20 minutes

Passivation Method 1, Type 8: 45-55% HNO₃ by 49-54 °C in min. 30 minutes

Passivation Method 2:

4-10% Citric acid by 60-71 °C in min. 4 minutes or by 49-60 °C in min. 10 minutes

or by 38-49 °C in min. 20 minutes or by 0-38 °C in min. 30 minutes

QQ-P-35C

US Mill. Standard from 1988 – discontinued but still used some places

Recipe: (similar to AMS 2700)

Passivation I: 25-45% HNO₃ by 21-32 °C in min. 30 minutes

Passivation II: 20-25% HNO₃ by 49-60 °C in min. 20 minutes

Scanbejds pickling: 20% HNO₃ + 5% HF by 21-60 °C in min. 30 minutes
- meets ASTM A380

Scanbejds passivation: 25% HNO₃ by 21-32 °C in min. 30 minutes
- meets all 4 standards

All passivations can be combined with a pre-neutralizing

Neutralizing: 5 % NaOH (lye) by 71-82 °C in min. 30 minutes