

Etchant Selection Guide for Stainless Steels and Superalloys

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Microstructures of Stainless Steels

Name	Etchant
General microstructure (unknown grade)	Vilella's reagent
Austenite grains (austenitic stainless steel)	Electrolytic etching (best) or Marble's (aggressive)
Carbides	Vilella's reagent
Carbides, sensitized	Vilella's reagent
Delta ferrite	Vilella's
Ferrite grains (ferritic stainless steel)	Kalling's
Martensite structure	Vilella's, Fry's, or Kalling's 2
Sigma phase	Vilella's

Stainless Steels and Superalloys

Alloy Name	Etchant
301	Fry's
302	Fry's
303	Fry's or Vilella's
303SE	Kalling's 2
304	Fry's or Vilella's
309	Vilella's
310	Vilella's
316	Marble's
317	Marble's
321	Marble's
347	Vilella's
403	Vilella's
405	Vilella's
410	Vilella's
416	Vilella's
418	Vilella's
420	Vilella's
422	Vilella's
430	Vilella's
431	Fry's
440	Vilella's

135 Mod (Nitalloy 135 Mod)	Vilella's
13-8 PH	Fry's
15-5 PH	Fry's
17-22	Vilella's
17-22A	Vilella's
17-4 PH	Fry's
21-6-9 (21Cr-6Ni-9Mn)	Fry's
22-13-5 (22Cr-13Ni-5Mn)	Fry's
300M	Fry's
A182 F51	Superalloy Etch
A286	Fry's
AerMet (All)	Fry's
AISI 664 (V-57)	Kalling's 2
Alloy 20 (20Cb-3 stainless)	Vilella's
Alloy 901 (Nimonic 901, Pyromet 901)	Kalling's 2
Alloy 92	Fry's
Alloy X	Superalloy Etch
AM 355	Vilella's
Chrome Core 12-FM	Kalling's 2
Chrome Core 13-FM	Kalling's 2
Chrome Core 13-XP	Kalling's 2
Chrome Core 18-FM	Kalling's 2
Chromoly	Vilella's
Colmonoy	Superalloy Etch
CK20 (Cast 310)	Marble's
CRES (corrosion-resistant steel)	Fry's
D6AC	Vilella's
Discaloy	Superalloy Etch
ER308	Fry's
FV535	Vilella's
Greek Ascology	Superalloy Etch or Vilella's
GTD222	Fry's
Hastelloy X (Pyromet 680)	Superalloy Etch
Hastelloy HR-120	Fry's
HP 9-4-20	Fry's
HP 9-4-30	Fry's
Hy-Tuf	Fry's
Incoloy 800 HT	Superalloy Etch
Incoloy 903	Superalloy Etch
Incoloy 907	Fry's
Incoloy 909	Superalloy Etch
Incoloy 925	Kalling's 2
Inconel 600	Superalloy Etch

Inconel 706	Kalling's 2
Inconel 713	Superalloy Etch
Inconel 718	Kalling's 2
Inconel 722	Fry's
Inconel 783	Fry's
Inconel 901	Superalloy Etch
Inco X750	Superalloy Etch
Invar 36	Fry's
JBK-75	Fry's
Jethete	Fry's
Kovar	Fry's
Monel	Fry's
Monel 400 (Nickel Copper 400)	Fry's
Monel K-500	Fry's
N155 (Alloy N155)	Fry's
N161	Fry's
NCF 3015	Kalling's 2
Nickel 200/201	Kalling's 2
Nimonic	Fry's
Nimonic C263	Superalloy Etch
Nimonic PE16	Fry's
Nitralloy	Fry's
Nitronic	Superalloy Etch
Pyromet 720	Kalling's 2
Pyromet 860	Kalling's 2
Pyromet V-57	Kalling's 2
Pyrowear 675	Vilella's
T321 stainless	Fry's
Thermo-Span	Fry's or Kalling's 2
TrimRite	Vilella's
Trinamet stainless	Vilella's
UDIMET 720 (U720)	Superalloy Etch
Waspaloy	Superalloy Etch