

Before etching, wet grind/polish the surface with 400 grit sand papers to remove any rust, surface oxides, etc. The surface needs to be cleaned and dried.

The procedure may be used to etch low alloy steels

	PROCESS	SOLUTION	TIME	TEMPERATURE	REMARKS
1.	Nital etch	Nital solution	15 – 60 seconds	Ambient	Agitate parts when immersed. Exact time may vary to produce desired black oxide film.
2.	Rinse	Circulating water	Rinse only	Ambient	To remove acid. Total immersion required.
3.	Hydrochloric acid dip	Hydrochloric Acid solution	30 – 60 seconds	Ambient	Agitate parts when immersed to remove black oxide film and provide uniform brownish grey surface.
4.	Rinse	Running water	Rinse only	Ambient	Agitate parts when immersed.
5.	Neutralize	Acid Neutralizer	15 seconds minimum	16 – 82 °C (60 – 180 °F)	Agitate parts when immersed.
6.	Rinse	Circulating water	Rinse only	Ambient	To remove caustic.
7.	Rinse	Alcohol	Rinse only	Ambient	To remove water.
8.	Inspect and evaluate per appropriate criteria.				
9.	Oil	Rust prevention oil	-	Ambient	To prevent corrosion.