Heat Treating Salts

- Ideal for Continuous Throughput
- Wide Offering of Melting Point and Working Range Temperatures
- Meet AMS 2821 Specification for Aerospace Applications
- Supplying the Industry for Over 100 Years

DuBois Heatbath Products

Quenching and Tempering Salts

Product Granular (Parkette)	Salt Type	Applications			Melting Point	Working Range	AMS Approval MIL Spec*
		Preheating/ Hardening	Quenching	Tempering/ Drawing			
Low Temp Draw Salt (275 Parkette)	Nitrite/ Nitrate	-	C	C	275°F (135°C)	300°-1100°F (149°-593°C)	AMS2821 Class 1 MIL-S-10699, Class I
Thermo-Quench (290 Parkette)	Nitrite/ Nitrate	-	C	C	288°F (142°C)	300°-1100°F (149°-593°C)	AMS2821 Class 1 MIL-S-10699, Class I
Marquench (330 Parkette)	Nitrite/ Nitrate	-	C	C	305°F (152°C)	400°-1100°F (204°-593°C)	-
Aus-Quench (350 Parkette)	Nitrite/ Nitrate	-	C	C	354°F (179°C)	400°-1100°F (204°-593°C)	-
High Temp Draw Salt	Nitrate	-	C	C	430°F (221°C)	480°-1100°F (249°-593°C)	-
Tempering C-ALHT	Nitrate	-	-	A	430°F (221°C)	480°-1100°F (249°-593°C)	AMS2821 Class 2 MIL-S-10699-B, Class 2
AL-2 Salt	Nitrate	-	C	C	500°F (260°C)	550°-1100°F (288°-593°C)	-

C = Ideal for carbon steels, HSS = Ideal for high speed tool steels and other complex high alloy steels, A = Ideal for aluminum solution heat treating
* AMA 2821 superceds MIL-S-10699

DuBois Quenching and Tempering Salts are composed of nitrite and/or nitrate based chemistries.
Other benefits include:

- Completely water soluble
- Easily washed off parts
- High heat transfer rates and heat capacity

These salts come standard in granular form with pink dye for identification purposes and an organic anticaking agent. They are also available without dye and anticake in a briquette form under the trade name Parkettes®.

Low Temp Draw Salt
An eutectic salt mixture offering the lowest melting point and widest working range available.

Thermo-Quench
Thermo-Quench is similar to Low Temp Draw Salt, but with a slightly higher melting point. This eutectic salt mixture is widely used for the interrupted or isothermal quenching of austenitized steels. Processes that benefit substantially from Thermo-Quench include austempering, martempering, marquenching; it is also suitable for tempering or drawing hardened steels. Quenching severity can be increased up to three-fold with water additions.

- Exceptionally fluid and water-soluble
- Low melting point
- High thermal conductivity stability

Marquench
An economical noneutectic salt mixture with a slightly higher melting point and narrower working range than Low Temp Draw Salt and Thermo-Quench salts. It is as fluid as lower melting salts when used above 400°F offering equivalent quenching and drain off.

Aus-Quench
A noneutectic salt whose melting point and working range make it the product of choice for ausquenching/ austempering.

High Temp Draw Salt
An economical salt; particularly suitable for isothermal tempering of steel.

AL-2 Salt
An economical noneutectic salt mixture that can be used for interrupted or isothermal quenching of austenized steel. These processes include austempering, martempering, and marquenching. AL-2 salt is very chemically and thermally stable when used within its uppermost working range.

Aluminum Solution Heat Treating

Aluminum solution treating is commonly conducted in molten nitrate baths in the 850°-1050°F range. Maintenance of neutrality to avoid attacks on aluminum is critical. DuBois nitrate salts are formulated for maximum purity and neutrality for use in aluminum solution treating.

Tempering C-ALHT
A granular mixture of sodium and potassium nitrates. The salt is colored pink for identification purposes.

High Speed Hardening Salts

Product	Salt Type	Applications			Melting Point	Working Range	AMS Approval MIL Spec*
		Preheating/ Hardening	Quenching	Tempering/ Drawing			
Sta-Hard 17	Neutral	HSS, C	-	-	1175°F (635°C)	1300°-l900°F (704°-1038°C)	-
Sta-Hard 45	Neutral	HSS	-	-	1450°F (788°C)	1550°-2100°F (834°-1149°C)	-
High Speed 60	Neutral	HSS	-	-	1600°F (871°C)	1700°-2300°F (927°-1260°C)	AMS2821 Class 6 MIL-S-10699-B, Class 6
High Speed 75	Neutral	HSS, SS	-	-	1750°F (954°C)	1900°-2400°F (1038°-1316°C)	AMS2822 Class 7 MIL-S-10699-B Class 7A
#800 Neutral Salt	Neutral	-	HSS, C	HSS, C	850°F (454°C)	925°-1250°F (496°-677°C)	-
#900 Neutral Salt	Neutral	-	HSS, C	HSS, C	920°F (493°C)	1000°-1300°F (538°-704°C)	AMS2821 Class 4A MIL-S-10699-B Class 4A

C = Ideal for carbon steels, HSS = Ideal for high speed tool steels and other complex high alloy steels, SS = Ideal for stainless steels
* AMA 2821 superceds MIL-S-10699

Large numbers of tools can be safely hardened in a short time frame using a high speed steel (HSS) salt bath setup. These salts are formulated for proper heat treatment of HSS by balancing the salt's composition to insure a neutral bath, reduce dragout or carryover and to promote easy cleaning. The benefits of heat treating HSS in DuBois molten salts are:

- Parts are hardened uniformly
- Decarburization or pitting issues will be minimized
- Proven to control distortion

Sta-Hard 17
A neutral salt for hardening, annealing, normalizing or preheating high speed tool steels. It creates a nondecarburizing media, making it suitable for heating high alloy steels which require high hardening temperatures.

Sta-Hard 45
Similar to Sta-Hard 17, but provides higher working temperatures.

High Speed 60
A neutral salt designed for heat treating high alloy steels commonly used between 1650° to 2200°F.

High Speed 75
Used in forging and high temperature hardening of high speed, high carbon, high chrome steels and stainless steels. Finish ground tools can be heated in High Speed 75 without harming critical areas such as threaded sections.

#800 Neutral Salt
Working range covers temperatures frequently used in quenching, drawing and tempering steel.

#900 Neutral Salt
For quenching, drawing and tempering steel. #900 is especially suited for oil hardening followed by relatively high draw, since no washing is required between quench and draw. #900 is less hygroscopic than #800 and can be used at higher temperatures.

Ba-Treat
An economical sulfate solution designed to remove barium from wastewater. Ba-Treat coagulates the barium precipitate which quickly settles to the bottom of rinse tanks for easy removal. Discarding of solid barium waste needs to be in accordance with state and federal chemical disposal regulations.

DuBois Commitment

DuBois professionals support the largest captive and commercial heat treaters in North America and worldwide. Our salts, which meet ASM 2821 specification for aerospace applications, are also widely used by the automotive industry, gear manufacturers, firearm suppliers and NADCAP heat treaters. Our commitment is to provide customers with proven products that are high-functioning, economical and effective.

Neutral Salts

Product	Salt Type	Applications			Melting Point	Working Range	AMS Approval MIL Spec*
		Preheating/ Hardening	Quenching	Tempering/ Drawing			
Uni-Hard® IR	Neutral	HSS	-	-	1020°F (549°C)	1100°-1700°F (593°-927°C)	-
10699 Class IV Salt	Neutral	HSS	-	-	1020°F (549°C)	1100°-1700°F (593°-927°C)	AMS2821 Class 4 MIL-S-10699-B, Class 4
Nu-Sal	Neutral/ Barium-Free	HSS, C	-	-	1230°F (665°C)	1300°-1650°F (704°-899°C)	AMS2821 Class 5 MIL-S-10699-B, Class 5

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* AMA 2821 superceds MIL-S-10699

DuBois Neutral Salts are balanced mixtures of chlorides designed to provide a pH neutral salt bath.

- Excellent fluidity; low drag out
- Highly stable and nonhygroscopic
- Ideal for preheating and hardening

Nu-Sal
This barium-free salt is the most economical and commonly used neutral salt for heat treating performed within its working range. It is nonhygroscopic so it is less corrosive to metal and fixtures.

Uni-Hard® IR
Frequently used as a preheat for tool hardening, or as a heating medium for continuous production hardening.

10699 Class IV Salt
Chemically formulated to meet AMS 2821 Class 4 requirements. Formily referenced as MIL-S-10699-B Class 4.

Salt Bath Rectifiers

Base Salt	Rectifier
#800 Neutral Salt	800 MPR
#900 Neutral Salt	900 MPR
Uni-Hard® IR	#20 Pellet Rectifier
10699 Class IV Salt	#20 Pellet Rectifier
Nu-Sal	#15 Pellet Rectifier
Sta-Hard 17	#20 Pellet Rectifier
Sta-Hard 45	#20 Pellet Rectifier
High Speed 60	#20 Pellet Rectifier
High Speed 75	#20 Pellet Rectifier

DuBois Rectifier Pellets offer an alternative to using a methyl chloride gas system. Rectifiers help maintain optimum bath operating conditions, and aid in removing impurities which develop in salt baths during operation.

- Accurate control of rectification
- Will not produce sludge
- Equivalent to methyl chloride in rectification ability
- Minimizes rectification time

Melting point reducers (MPR) are replenishers for maintaining low temperature fluidity in the corresponding salts when they are used as quenchants from a high speed hardening salt.

800 MPR
Use with #800 Neutral Salt.

900 MPR
Use with #900 Neutral Salt.

#15 Rectifier Pellets
A solid pellet which is immersed in Nu-Sal baths to maintain neutrality. Pellet Rectifier Cages are available to use in conjunction with the pellets.

#20 Rectifier Pellets
A solid pellet which is immersed in high speed steel barium-based salt baths to maintain neutrality. Formulated for use in the 1900°-2400°F temperature range. Pellet Rectifier Cages are available to use in conjunction with the pellets.

Graphite Rods
2" x 24" carbon sticks can be sued to remove metallic particles from neutral baths operated over 1900°F.

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