Martin

SALT CAPABILITIES

Rock Salt

Brine Salt

Evaporated Salt

Solar Evaporated Salt

Inventory

We maintain large inventories to ensure superior service to all customers.

That Personal Touch

When you call Martin, a person answers your call every time.

Complete Manufacturer

We manufacture what we sell, which means we control the quality, inventory levels, deliveries and cost of our products.

Point-of-Sale Service

We have built our inventories, services and capabilities to meet the demands of the market areas each of our locations serve.

After-Hour Emergencies

Each of our locations have people on-call for stock, altered and made-to-order products, 24 hours a day, 7 days a week, 365 days a year.

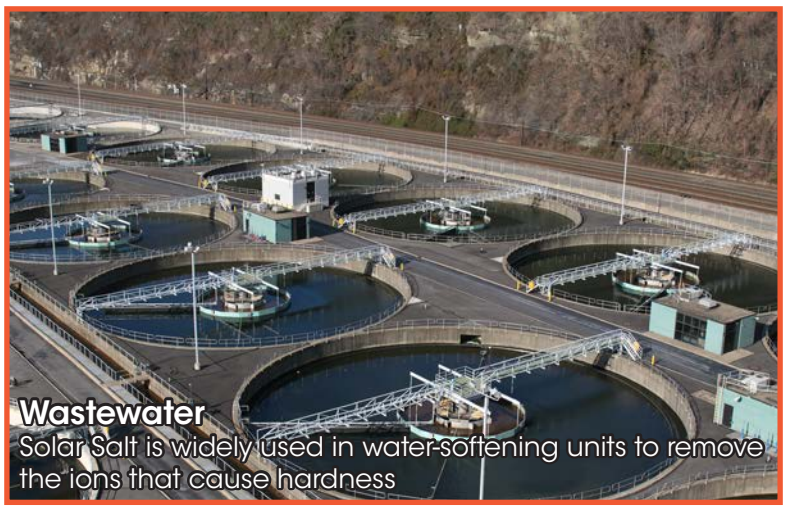
Superior Field Support

We have field professionals who understand our products, processes and services. They are available to help better match our offerings with your specific needs.

Chemical Industry
Salt Brine is primary used for chlorine, caustic soda, and synthetic soda ash manufacturing

Ice Control and Road Stabilization
Rock Salt is mainly used for road deicing.

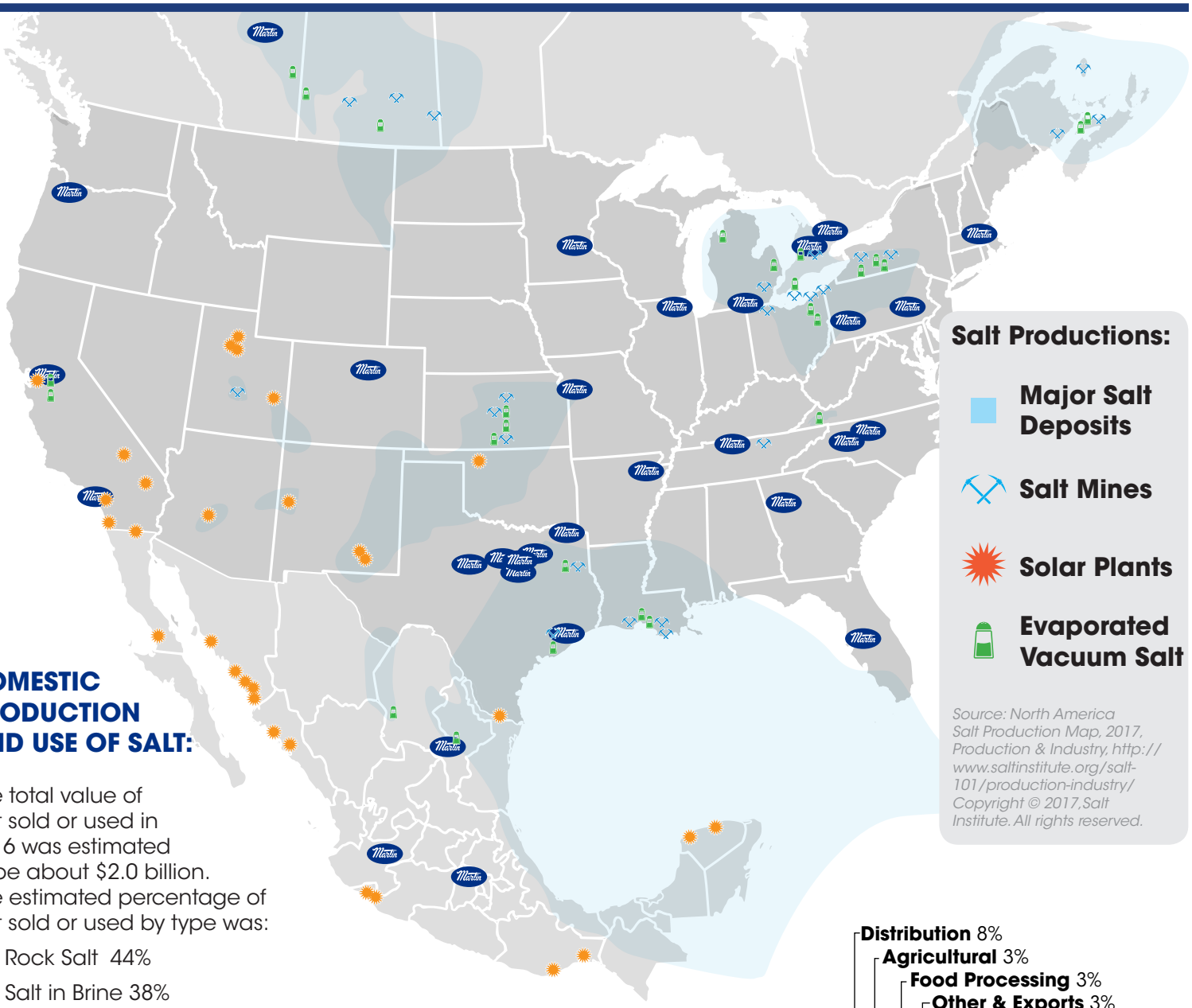
Food Processing Industry
Vacuum Pan Salt from mechanical evaporation of a purified brine is more commonly used



Wastewater
Solar Salt is widely used in water-softening units to remove the ions that cause hardness

Oil & Gas
Solar Salt is used in the oil & gas industry and is an important component of drilling fluids

SALT INDUSTRY PROCESSES



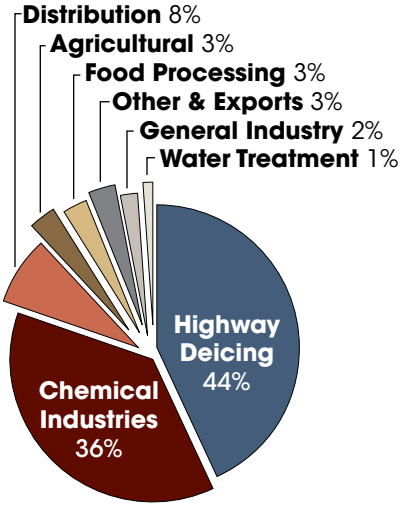
DOMESTIC PRODUCTION AND USE OF SALT:

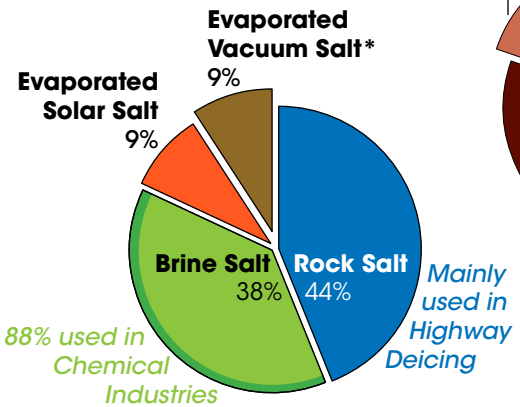
The total value of salt sold or used in 2016 was estimated to be about $2.0 billion. The estimated percentage of salt sold or used by type was:

- Rock Salt 44%
- Salt in Brine 38%
- Solar Salt 9%
- Vacuum Pan Salt 9%

Total of salt consumed by usage:

- Highway Deicing 44%
- Chemical Industry 36%
  - *Of which 88% it was Salt in Brine*
  - *Mainly Chlorine and Caustic Coda*
- Distributors 8%
- Agricultural 3%
- Food processing 3%
- Other uses and with exports 3%
- General industrial 2%
- Water treatment 1%





* Evaporated Salt Type includes Vacuum and Solar Salt, but typically Vacuum Salt is known as Evaporated Salt.

Percentage Source: U.S. Geological Survey, 2017, Mineral commodity summaries 2017: U.S. Geological Survey, 202 p., https://doi.org/10.3133/70180197

SALT INDUSTRY PROCESSES by Salt Product

In the Salt Industry there are 4 main types of Salt products:
Brine Salt, Evaporated Salt, Solar Salt and Rock Salt.

Product Lines: Power Transmission · Conveyor Pulleys · Material Handling · Idlers

Conveying & Handling

Salt is a hygroscopic and abrasive material that requires a careful selection of conveying products, construction material and configurations. Some parts of the process might require the conveyor to be constructed with non-contaminating materials, specially for handling and storing table salt.

Martin products used: ***Screw Conveyors, Vertical Screw Conveyor, Bucket Elevators, Drag Conveyors, Sprockets, Sheaves, Bushings and Couplings***

BRINE SALT

Brine Salt consist of natural brines, which have been recovered in their liquid form, and artificial brines resulting from the dissolution of underground halite beds that have been solution mined. Virtually all the brine salt produced in the United States today is made using solution mining.

Solution Mining

Over salt beds or domes, wells are erected where hot water is pumped under pressure into the rock salt layers through an out pipe. The hot water dissolves the salt to form a concentrated brine solution, which under pressure, is pumped back to the surface through the inner pipe. Brine is a name used for aqueous sodium chloride solution. The brine is pumped to storage tanks and sent to a refining plant for purification.

Martin products used: ***Sheaves, Bushings and Couplings***

EVAPORATED SALT (VACUUM PAN/OPEN PAN)

Vacuum Pan and Open Pan Salt is not mined but is a type of salt produced using mechanical evaporation technology. Although any of the other tree types of salt may be used to make vacuum pan salt, virtually all domestic vacuum pan salt is obtained from solution-mining underground salt formations.

Vacuum Pans

Vacuum pan salt is obtained by dehydrating brine using heat alone or in combination with a vacuum. The grainer or open-pan process uses open, rectangular pans with steam-heated immersion coils to evaporate the water in the brine. The final product is usually flake shaped rather than the typical cubic form. Flake salt is preferred for the production of baked goods, butter, and cheese.

Depending on the type of salt it will be, iodine and an anti-clumping agent are added to the salt. Most table salt is produced this way.

Martin products used: ***Sprockets, Sheaves, Bushings and Couplings***

EVAPORATED SOLAR SALT

Solar Salt is obtained from the extraction of salt by seawater evaporation along coastal margins and by the evaporation of inland landlocked bodies of natural saline water and artificial brines. Solar salt production uses wind and the sun to evaporate the water, leaving behind relatively pure crystals of salt.

Evaporation Ponds

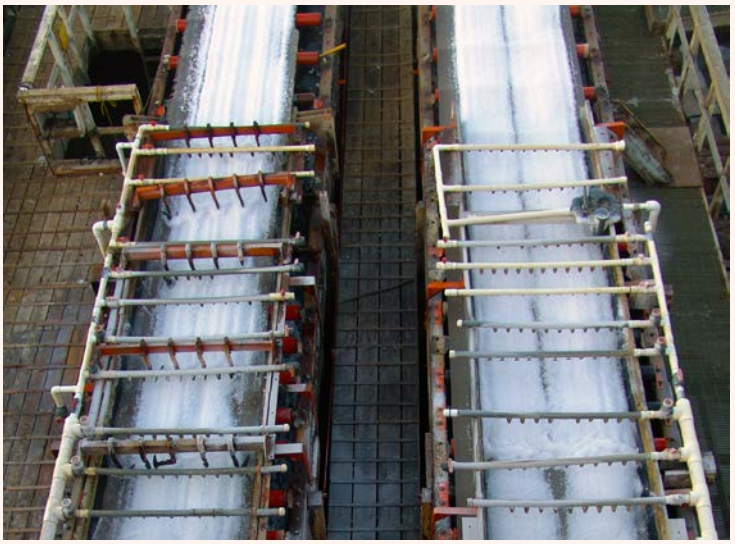
Because evaporation rates must exceed precipitation rates, the climatic conditions and geographic locations of solar evaporation facilities are critical to the successful production and harvesting of solar salt. Only unpredictable seasonal precipitation and market conditions usually affect the production rates of these facilities.

Martin products used: *Sheaves, Bushings and Couplings*

Mobile Harvesters

The harvester is designed to pick up salt and load trailers while traversing evaporation ponds from end to end. The salt harvester design is based on an earth-moving track machine and has a variable pitch blade feeding onto a screw lift, which in turn feeds two elevating conveyor belts that discharge onto a bidirectional conveyor belt. In some occasions the salt is taken to be washed (in clean brine to prevent loss), and sometimes they are crushed and dried in kilns.

Martin products used: *Screw Conveyors, Conveyor Pulleys, Idlers, Sprockets, Gears, Sheaves, Synchronous Sprockets, Bushings and Couplings*



Salt Washing

The salt is conveyed in belt sand and high pressured water washes the salt as it goes through. Some plants have a screw conveyor that washes the lumps of salt from other organic materials, these conveyors also help in dewatering the salt.

Martin products used: *Screw Conveyor, Conveyor Pulleys, Idlers, Sprockets, Sheaves, Bushings and Couplings*

Kiln / Dryer

Here the product is dried, the kiln has large MTO Gears that allow the rotation of the cylinder body of the kiln. The dried and hot products are later cooled in cylinders then stored and distributed to their respective processing/ refining plant.

Martin products used: *Sprockets, MTO Sprockets, Gear, MTO Gears, Sheaves, Bushings and Couplings*

Crushing & Screening

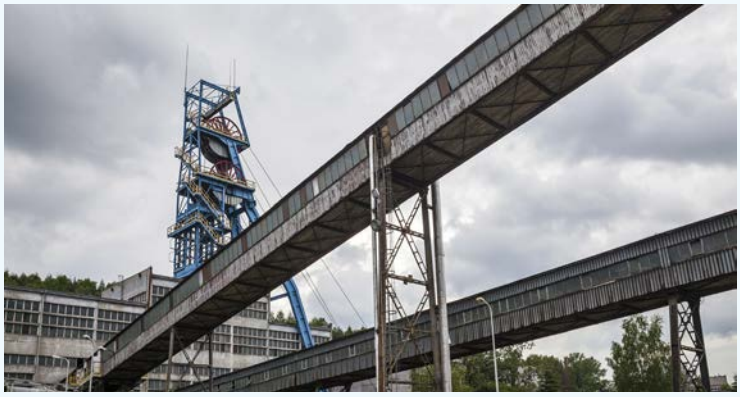
After washing and drying, if needed, the salt is conveyed to be crushed into a smaller size using a Cone Crusher, Jaw Crusher or Gyratory Crusher, which typically requires large MTO Sheaves (Jaw Crusher) or MTO Gears (Cone Crusher). After crushing, the salt is conveyed and separated by size through a screening application. The process is repeated until the salt has reached the ideal size.

Martin products used: *MTO Sheaves, MTO Gears, Screw Conveyors, Bucket Elevators, Conveyor Pulleys, Idlers, Sprockets, Sheaves, Bushings and Couplings*

SALT INDUSTRY PROCESSES by Salt Product

ROCK SALT

Rock Salt is evaporite mineral that included bedded salt, salt domes, and playa salt, underground rock salt mining is confined to bedded salt and salt domes.



Deep-Shaft Mining

Rock salt producers operate at high rates because increased demand requires mining companies to extend hours to increase output.

Rock salt is mined by the room-and-pillar method, which is similar to that used in coal and trona mining. Shafts are sunken down to the floor of the mine and rooms are carefully constructed by drilling, cutting and blasting between shafts, creating a check board pattern.

Martin products used: *Bucket Elevators, Screw Conveyors, MTO Sheaves, MTO Gears, Conveyor Pulleys, Idlers, Sprockets, Sheaves, Bushings and Couplings*

Crushing & Screening

The salt after extraction is again crushed to a smaller size using a Cone Crusher, Jaw Crusher or Gyratory Crusher, which typically requires large MTO Sheaves (Jaw Crusher) or MTO Gears (Cone Crusher). After crushing, the salt is moved by a Conveyor Belt System and separated by size through a screening application. The remaining salt lumps that are too large will go back by Conveyor Belt to the Main Crusher and/or Secondary crusher where the process is repeated until the salt has reached the ideal size.

Martin products used: *MTO Sheaves, MTO Gears, Conveyor Pulleys, Idlers, Sprockets, Sheaves, Bushings and Couplings*

Stock Piles

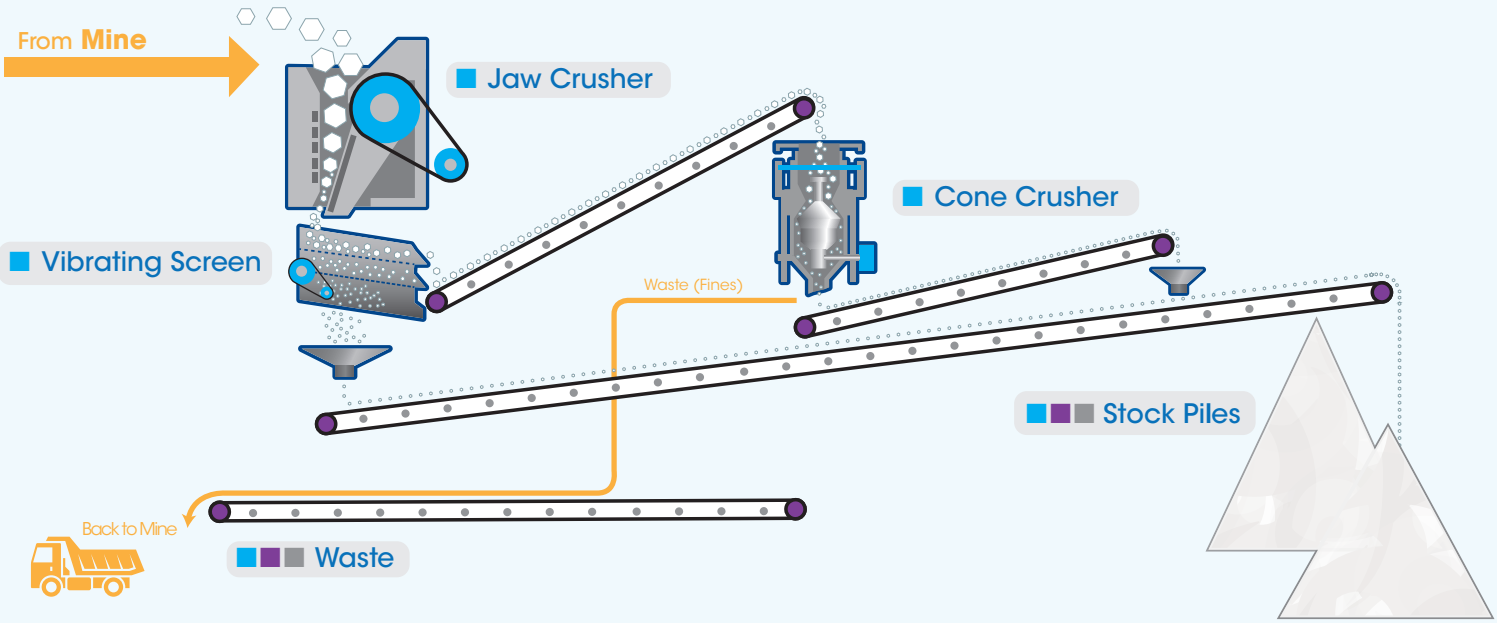
A landing spot for product until ready for the next process.

Martin products used: *Conveyor Pulleys, Idlers, Sprockets, Gears, Sheaves, Bushings and Couplings*

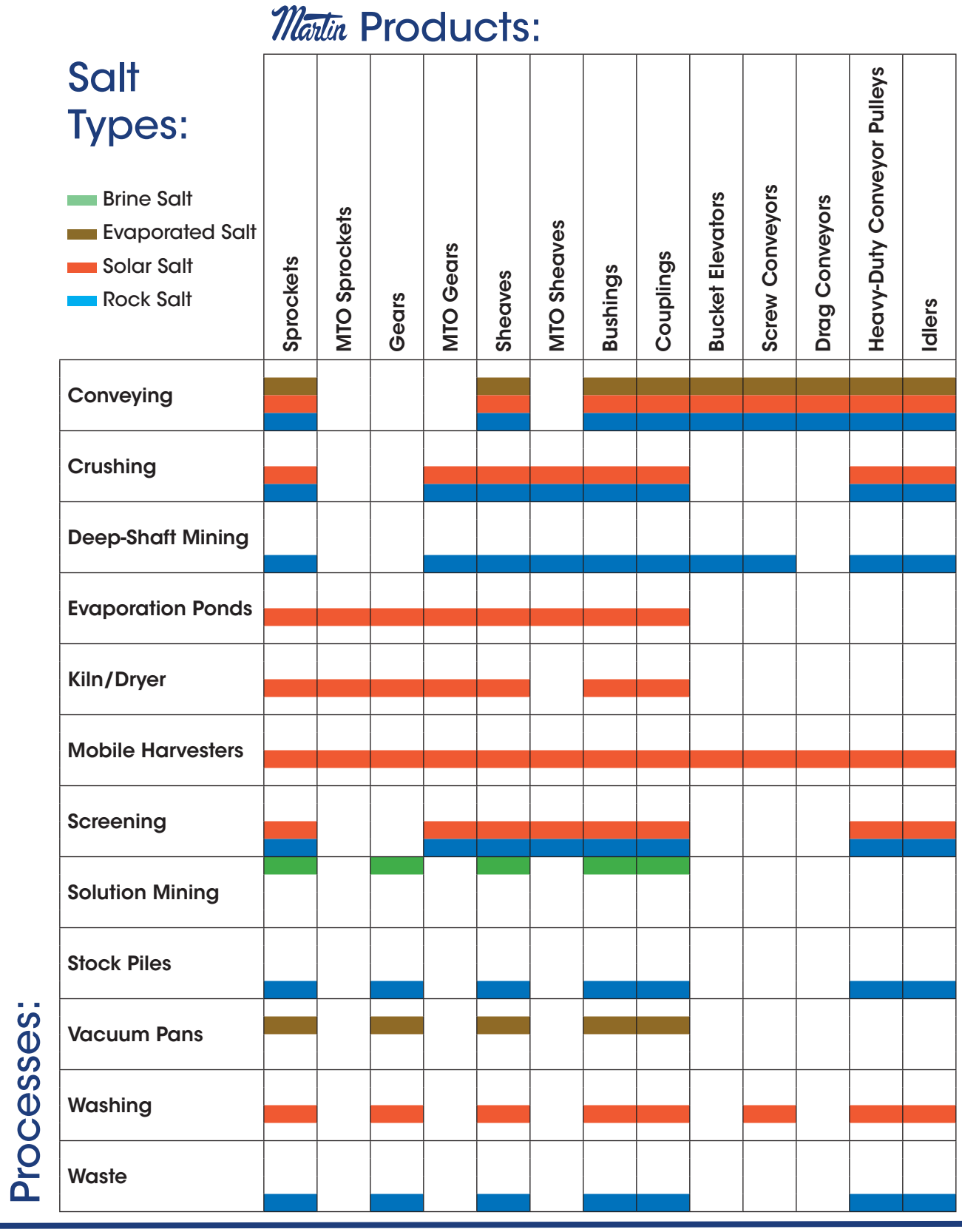
Waste

Waste from the above process, known as fines, is then transported back to the mining pit by Conveyor Belt or trucks.

Martin products used: *Conveyor Pulleys, Idlers, Sprockets, Gears, Sheaves, Bushings and Couplings*



Where can we find Martin products?



Martin Products at Work in the Salt Industry

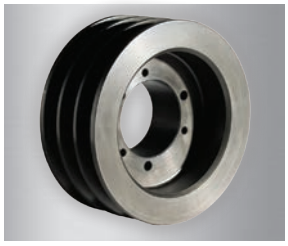

Roller Chain Sprockets


Engineering Class Sprockets

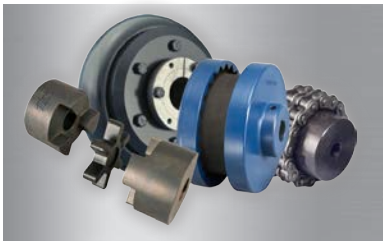

Gears

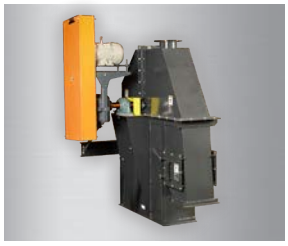

MTO Gears


Bushings


Sheaves

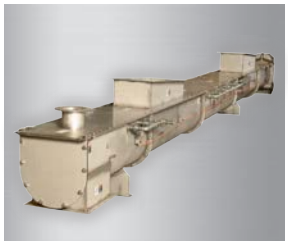

MTO Sheaves

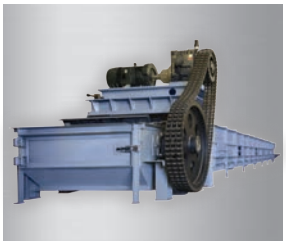

Couplings

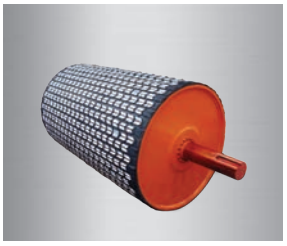

Bucket Elevators


Clean Flight Wing Pulley


Screw Conveyors


Shaftless Screw Conveyors


Drag Conveyor


Conveyor Pulleys


Idlers

USA

Corporate Offices Sales & Manufacturing

Arlington, TX
817-258-3000 (FAX 817-258-3333)

Regional Manufacturing Plants

Albemarle, NC
704-982-9555 (FAX 704-982-9599)

Atlanta, GA
404-292-8744 (FAX 404-292-7771)

Burleson, TX
817-295-7151 (FAX 817-447-3840)

Danielsville, PA
610-837-1841 (FAX 610-837-7337)

Ft. Worth, TX
817-258-3000 (FAX 817-258-3173)

Montpelier, OH
419-485-5515 (FAX 419-485-3565)

Sacramento, CA
916-441-7172 (FAX 916-441-4600)

Manufacturing Only

Abilene, TX • Clarksville, TX • Dallas, TX
Mansfield, TX • Paragould, AR

Branch Manufacturing Plants

Boston, MA
508-634-3990 (FAX 508-634-3998)

Charlotte, NC
704-394-9111 (FAX 704-394-9122)

Chicago, IL
847-298-8844 (FAX 847-298-2967)

Denver, CO
303-371-8466 (FAX 303-371-7116)

Houston, TX
713-849-4330 (FAX 713-849-4807)

Kansas City, MO
816-231-5575 (FAX 816-231-1959)

Los Angeles, CA
323-728-8117 (FAX 323-722-7526)

Minneapolis, MN
952-829-0623 (FAX 952-944-9385)

Nashville, TN
615-871-4730 (FAX 615-871-4125)

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724-452-4555 (FAX 724-452-5794)

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