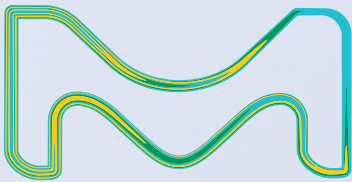


**MILLIPORE  
SIGMA**

# EMSURE® Granulated Salts

Consistent flow  
meets analytical  
purity



MilliporeSigma is the U.S.  
and Canada Life Science  
business of Merck KGaA,  
Darmstadt, Germany.

**Supelco®**  
Analytical Products

# Flawless Flow. Trusted Purity.

## The challenge

Who hasn't been there? You open a bottle of salt and want to weigh it for your experiment or analysis. However, instead of powder, there are only hard lumps in the bottle.

Clumping or caking can occur when salts absorb moisture from the air or contain water of crystallization within their structure.

Analytical grade salts tend to cake even more due to their high purity. This not only impairs your analytical chemistry workflow and lab efficiency, salt clumps can pose safety risks to lab workers and their disposal can present environmental hazards.



## Our solution

### EMSURE® Granulated Salts

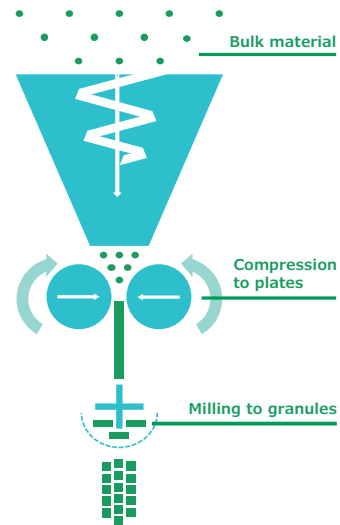
In contrast to powdered salts, granulated salts have better flow properties to ensure consistent handling and processing. Our dry granulation process keeps salts free-flowing while maintaining premium specifications, even under long-term storage.

#### Benefits:

- High purity at EMSURE® analytical grade
- Chemical stability for consistent results
- Improved flowability for easier handling, safety and less waste
- No change of the product specifications nor the raw materials

## Dry Granulation by Roller Compaction

Dry granulation preserves raw material characteristics without water or additives. This gentle process, which is particularly appropriate for heat and moisture sensitive materials, ensures high-quality standards to maintain the analytical purity, consistency and quality of our granulated salts - making them an ideal alternative to powdered salts.



## Flowability

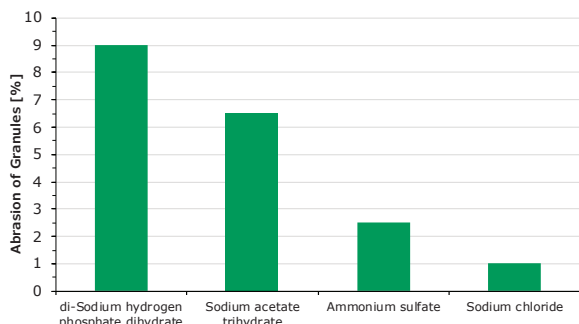
Our granulated materials offer superior flowability compared to powders, enhancing handling, safety, and lab efficiency.

	Powder		Granules	
<b>t = 0</b>				
	NaH <sub>2</sub> PO <sub>4</sub> * H <sub>2</sub> O		NaH <sub>2</sub> PO <sub>4</sub> * H <sub>2</sub> O	
	NaCl		NaCl	
<b>t = 12 months at 25°C / 60 % rH</b>				
	NaH <sub>2</sub> PO <sub>4</sub> * H <sub>2</sub> O		NaH <sub>2</sub> PO <sub>4</sub> * H <sub>2</sub> O	
	NaCl		NaCl	

Comparison of standard powdered to granulated material

## Abrasion

The sustained integrity of granules during transport and storage is key to preserving their desirable characteristics. Our granulated salts are tested for excellent integrity with very low abrasion rates.



Material integrity was tested using an abrasion drum with ceramic balls. The drum was rotated at 20 rpm for 10 min and the percentage of fine particles mass <500 µm was determined.

## Dissolution

Dissolution behavior of granulated material is slightly slower as compared to powdered material. Studies showed slightly faster dissolution of powdered material due to larger surface area. However, powder material in a clumped state would require longer dissolution times.

	Dissoluton Time [min]	
	Powder	Granules
Ammonium sulfate	4	7
Potassium chloride	6	6.5
Sodium acetate trihydrate	3	5
Sodium chloride	3	6

Dissolution studies were performed by dissolving 80 g of the respective material in 800 mL of purified water. Samples were stirred at 250 rpm at room temperature and particles were determined by focused beam reflectance measurement (FBRM).

# EMSURE® Granulated Salts

EMSURE® salts are ideal for advanced and regulated analytical applications, offering:

- **Batch-to-batch consistency for reliable and reproducible results**
- **Extremely low levels of impurities to ensure analytical accuracy**
- **Compliance with international regulatory requirements**
- **Comprehensive documentation support for audits and quality control**

[SigmaAldrich.com/](https://www.sigmaaldrich.com)  
Emsure-Granulated-Salts

## Ordering Information

Cat. No.	Content (kg)	Order No.
Ammonium sulfate granulated for Analysis EMSURE® ACS,ISO,Reag. Ph Eur	1 KG	<a href="#">1173951000</a>
	5 KG	<a href="#">1173955000</a>
	25 KG	<a href="#">1173959025</a>
Potassium chloride granulated for Analysis EMSURE®	1 KG	<a href="#">1174161000</a>
	5 KG	<a href="#">1174165000</a>
	25 KG	<a href="#">1174169025</a>
Sodium acetate trihydrate granulated for Analysis EMSURE® ACS,ISO,Reag. Ph Eur	1 KG	<a href="#">1174181000</a>
	5 KG	<a href="#">1174185000</a>
	25 KG	<a href="#">1174191000</a>
Sodium chloride granulated for Analysis EMSURE® ACS,ISO,Reag. Ph Eur	1 KG	<a href="#">1174195000</a>
	5 KG	<a href="#">1174199025</a>
	25 KG	<a href="#">1174171000</a>
di-Sodium hydrogen phosphate dihydrate granulated for Analysis EMSURE®	1 KG	<a href="#">1174175000</a>
	5 KG	<a href="#">1174179025</a>
	25 KG	<a href="#">1174179025</a>

