CELQUAT® SC-230M

A high viscosity surfactant compatible cationic conditioner.

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Section 1

Sales Specifications for CELQUAT® SC-230M

AkzoNobel
Tomorrow's Answers Today

CELQUAT® SC-230M polymer

INCI Name: Polyquaternium-10

Specification

Appearance	Tan powder, essentially free of foreign matter

Parameter	Limits
% Nitrogen (as is)	1.5 - 2.2
% Volatiles	8.0 maximum
pH (1% aqueous solution)	5.0 - 8.0
Viscosity (cps) (1% solution)	500 - 2,750

Measurements
Volatiles are determined on a 2 gram sample heated at 130°C for 1 hour.

RVT, 20 RPM, Spindle #3, 25°C

Issued: 2004.02

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Section 2

Technical Sales Bulletin for CELQUAT® SC-230M

CELQUAT® SC-230M Polymer

AkzoNobel
Tomorrow's Answers Today

CELQUAT® SC-230M Polymer
INCI: Polyquaternium-10

Cationic Cellulosic for Conditioning

INTRODUCTION

The CELQUAT® SC-230M polymer is a high viscosity building, surfactant compatible cationic conditioner useful in a broad range of personal care products. This water soluble modified cellulosic is highly cationic over the entire useful pH range, is substantive to hair and skin, and provides such aesthetic benefits as improved wet comb, detangling, body, lubricity, and rich feel. It can also contribute significant thickening effects.

The CELQUAT SC-230M polymer is one member of the CELQUAT family of polymers that are water soluble quaternary cellulose derivatives. Other CELQUAT polymers offered by AkzoNobel include:

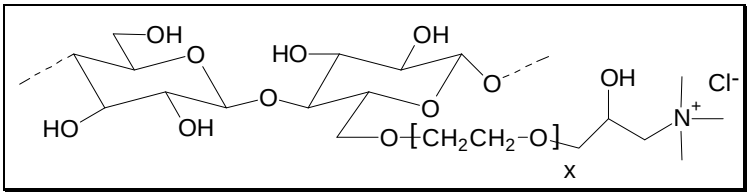
Polyquaternium-4
- CELQUAT H-100 polymer
- CELQUAT L-200 polymer

Polyquaternium-10
- CELQUAT SC-240C polymer

Polyquaternium-4/Hydroxypropyl Starch Copolymer
- CELQUAT LS-50 polymer

The CELQUAT SC-230M polymer is a high viscosity building quaternized conditioning polymer. It is prepared by reacting a trimethyl ammonium substituted epoxide onto the hydroxyl groups of the hydroxyethyl cellulose backbone. This reaction yields a polymer with a dispersed series of cationic charges along the polymer chain. This polymer is a higher viscosity variant of its chemically similar sister product, the CELQUAT SC-240C polymer.

CELQUAT SC-230M Polymer Chemistry



APPLICATION AREAS

The CELQUAT SC-230M polymer has excellent conditioning and thickening properties, and can be used in a wide variety of hair and skin applications, including shampoos, conditioners, body/facial washes, cleansers, styling aids and lotions/creams.

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CELQUAT® SC-230M Polymer

FEATURES / BENEFITS

- Substantivity to hair and skin
- Surfactant compatibility
- Clarity
- Rheology modification
- Lubricity
- Imparts smooth, rich feel to hair and skin
- Forms clear aqueous solutions and non-tacky continuous films
- Improves wet combability
- Improves gloss and anti-static properties on hair

SUGGESTED USE LEVELS, AS SUPPLIED

Cleansing formulations: 0.10% to 0.50%

FORMULATION GUIDELINES

The choice of the appropriate CELQUAT conditioning polymer to use may depend on the end use. The high viscosity CELQUAT SC-230M polymer is best suited for thicker pour out cleansing products, creams, and gels. Other CELQUAT polymers may be better suited for use in actuated products such as mousses and spritzes, as well as lower viscosity shampoo and pour out products.

Solubilization

The CELQUAT SC-230M polymer is water soluble. For optimal results, prepare the CELQUAT polymer solution as a separate phase. Slowly sift the powder into water while stirring. Sifting slowly will avoid the formation of fisheyes and gels. Heat and moderate agitation will increase the solubility rate of the polymer. The polymer is completely hydrated when the solution is clear and there are no insolubles present. Complete hydration is important to ensure homogeneity, viscosity stability, formulation stability, and clarity.

Surfactant systems containing the CELQUAT SC-230M polymer can easily be prepared with the fully hydrated CELQUAT solutions (incompatibilities can result if the CELQUAT polymer is added directly to the surfactant solutions). The preferred method is to slowly add the surfactants to the fully hydrated CELQUAT SC-230M solution. Add the nonionic and amphoteric surfactants first and then add the anionic surfactants. Continue mixing until uniform, and then add the balance of ingredients. It is also possible to add a hydrated CELQUAT SC-230M polymer pre-mix solution to the main batch with good agitation.

CELQUAT SC-230M polymer is not soluble in such alcohols as ethanol and isopropanol. It can tolerate up to 65% alcohol as a diluent. To incorporate alcohol, solubilize the polymer in a water/alcohol blend or add alcohol to an aqueous polymer solution. At 2% polymer by weight, the CELQUAT SC-230M polymer will thicken a 65% alcohol solution to a viscosity of approximately 10,000 cps (spindle #5, 50rpm, 25°C).

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CELQUAT® SC-230M Polymer

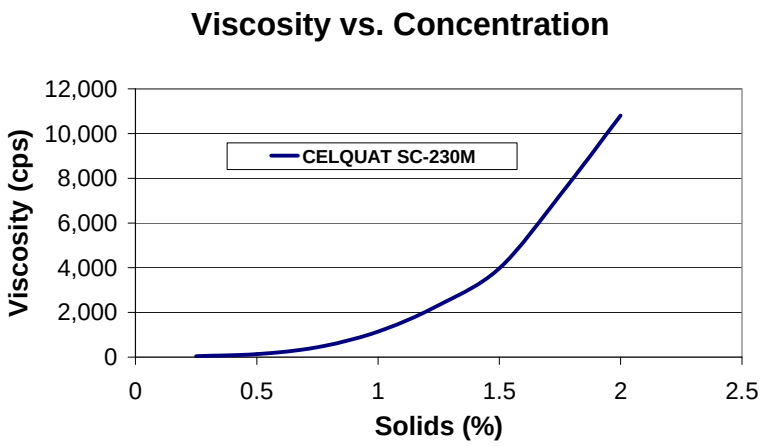
pH Stability

Solutions of the CELQUAT SC-230M polymer are subject to chemical hydrolysis at extreme pH. For optimum stability, a pH range of 4 to 8 is recommended.

Thickening

The CELQUAT SC-230M polymer provides multifunctional benefits to a formulation. In addition to providing conditioning benefits from a shampoo, the CELQUAT SC-230M polymer also acts as a thickener. Figure 1 below illustrates the viscosity of CELQUAT SC-230M polymer at various solids levels.

Figure 1



If additional thickening is required, this polymer can tolerate electrolytes added to build viscosity in concentrated surfactant systems. Other materials can also be used to control viscosity. Commonly used cellulosic type thickeners are effective in raising the solution viscosity, including hydroxyethyl cellulose and hydroxypropyl methylcellulose. Finally, the STRUCTURE® PLUS polymer (INCI Name: Acrylates/Aminoacrylates/$C_{10\text{-}30}$ Alkyl PEG-20 Itaconate Copolymer) from AkzoNobel is an effective associative thickener which can raise the viscosity of solutions containing the CELQUAT SC-230M conditioning polymer.

Preservation

Aqueous solutions of CELQUAT polymers are subject to bacteriological growth and enzyme catalyzed degradation. Preservatives suggested for consideration are DMDM hydantoin, methyl p-hydroxybenzoate, propyl p-hydroxybenzoate, Germall® 115 and 2 nitro-2 bromo-1, 3 propanediol. The presence of alcohol will also minimize bacteriological growth.

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COMPATIBILITY

Surfactant

The CELQUAT SC-230M polymer is an ideal way of adding conditioning functionality to a shampoo. The polymer was developed to be compatible with a wide variety of anionic, amphoteric, and non-ionic surfactants including:

- Sodium Lauryl Sulfate
- Ammonium Lauryl Sulfate
- Sodium Laureth Sulfate
- Ammonium Laureth Sulfate
- Cocamidopropyl Betaine
- PEG-80 Sorbitan Laurate
- Sodium Lauroamphoacetate
- Olefin Sulfonate
- Cocamide MEA

PERFORMANCE PROPERTIES

Substantivity

The cationic charge on the CELQUAT SC-230M polymer makes it substantive to keratinous substrates such as hair and skin.

The substantivity of the CELQUAT SC-230M polymer has been defined using the Lumicrease Dye Test. In this experiment, dyeing wool swatches with an anionic polyazo sulfonate dye after they have been treated with the cationic polymer quantifies deposition of cationic conditioning polymers. Wool is similar to human hair and skin in adsorptive and charge properties and can be used as an efficient substitute substrate for hair testing. The dye is attracted to the deposited cationic polymer. A colorimeter is used to measure the degree of adsorption on each sample via intensity of the dye. The swatches are tested for deposition after 1 wash (1) and 10 washes (10). The 1 wash data is indicative of substantivity, and a significantly higher value for the 10 wash reading over the 1 wash reading is indicative of build-up.

As is in Figure 2, CELQUAT SC-230M polymer is significantly less substantive than the CELQUAT L-200 and CELQUAT H-100 polymers, but is more substantive than the CELQUAT SC-240C analog. Based on the 10 wash results, this polymer may have some potential for build-up on this substrate.

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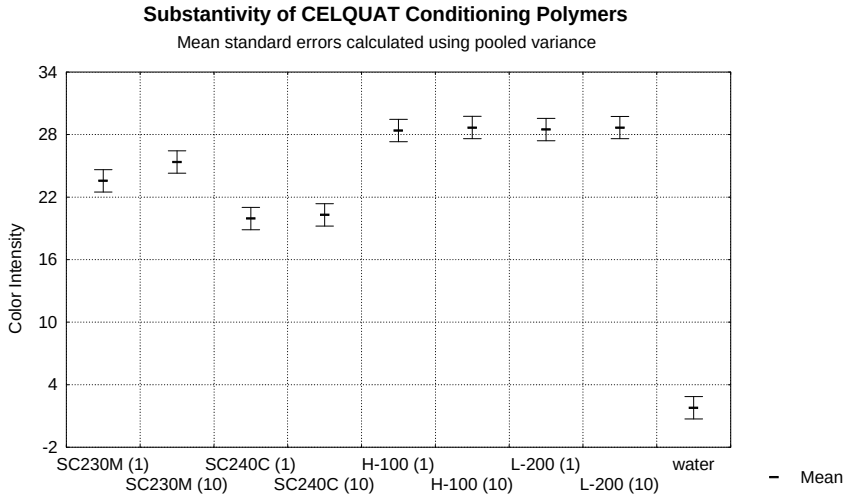
CELQUAT® SC-230M Polymer

Figure 2



Wet Comb Performance

The conditioning properties for the CELQUAT SC-230M polymer are readily seen in wet comb force reduction studies. Rinse-off wet combing properties were tested on damaged hair using the following model shampoo system:

Ingredient	%
CELQUAT polymer	0.5
Ammonium Laureth Sulfate	10.5
Cocamidopropyl Betaine	3.3
Cocamide MEA	0.5
Preservative	0.4
Ammonium Chloride	0.2
Water	to 100.0%

The wet combing studies were performed using the Sintech MTS Synergie 200 tensile tester in a constant temperature humidity room. The reported values are the average data from three sets of tresses. Each tress set represents averaged data for three replicates. The results below show that the CELQUAT SC-230M polymer significantly reduces wet comb force in the shampoo application after rinse off – more so than the other CELQUAT polymers.

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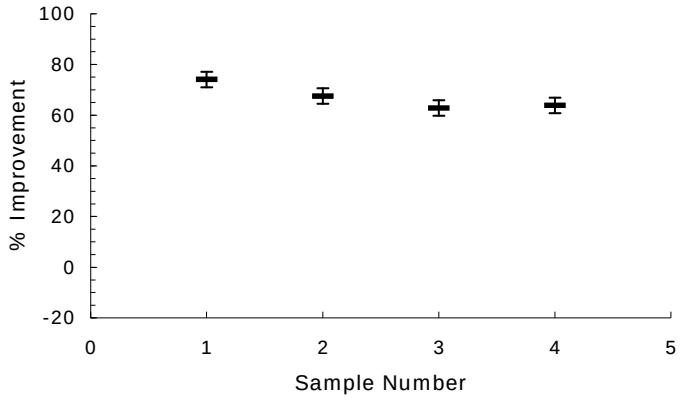
Figure 3: LSD Intervals for Average % Improvement



1. CELQUAT SC-230M polymer
2. CELQUAT SC-240C polymer
3. CELQUAT H-100 polymer
4. CELQUAT L-200 polymer

STORAGE AND HANDLING

The CELQUAT SC-230M polymer product should be stored in a cool, dry location away from heat, sparks or fire. When not in use, the container should be kept closed to prevent moisture and dust contamination. We recommend that normal precautions be taken to avoid ingestion or contact with eyes. Respiratory protection should be used to avoid dust inhalation. Good industrial hygiene practices should be followed. Please read the MSDS before using this or any other chemical.

HEALTH AND SAFETY

A health and safety summary for CELQUAT SC-230M polymer is available on request. Information on CELQUAT SC-230M polymer relating to EU Cosmetics Directive 76/768/EEC is also available upon request.

This product may be used in spray applications having a droplet particle size greater than 50 microns. The product has not been properly evaluated for safety clearance for use in pumps and/or aerosols with particle sizes less than 50 microns.

The suitability of the final formulations should be confirmed in all respect by appropriate evaluation. The marketer is advised to evaluate the final formulation with regard to performance and health safety.

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Section 3

Regulatory Information for CELQUAT® SC-230M

AkzoNobel
Tomorrow's Answers Today

CELQUAT® SC-230M polymer

Regulatory Information

Parameter	
CAS Number	81859-24-7
USA (TSCA)	Yes
Europe	Polymers of EINECS listed monomers
Canada	Yes
Australia	Yes

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AkzoNobel
Tomorrow's Answers Today

Sunday, August 02, 2009

Re: CELQUAT® SC-230M Material Origin BSE

To: Whom it may concern,

AkzoNobel Surface Chemistry Personal Care has completed a review of the ingredients used in the manufacture of our personal care products. As a result of this exercise, we are able to certify that the below product is free of any animal derived ingredients.

CELQUAT SC-230M polymer

Specifically, this product is derived from plant and synthetic sources.

Sincerely,

David Bower
Regulatory, U.S.
908 707-3756

Section 4

MSDS for CELQUAT® SC-230M

*** MATERIAL SAFETY DATA SHEET ***

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER	15-05170
PRODUCT NAME	CELQUAT® SC-230M Conditioning polymer
Manufacturer	Akzo Nobel Surface Chemistry LLC 525 West Van Buren Street Chicago, IL 60607-3823 USA www.surfactants.akzonobel.com EMERGENCY PHONES: MEDICAL: 914-693-6946 (Health & Safety Call Center-24 hours) TRANSPORT: CHEMTREC: 800-424-9300 (24 hours) CHEMTREC International: 703-527-3887 (call collect) CANUTEC: 613-996-6666 (24 hours) MSDS Requests/Customer Service: See phone numbers in Section 16
SYNONYMS	CTFA Name: Polyquaternium 10

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY Quaternary Cellulosic Derivative

COMPONENT	CAS NUMBER	CONCENTRATION (% by weight)
None classified as hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).		

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Possible physical irritant from dust particles. Potential for dust explosion.

Tan Powder. Negligible odor

EYE	Particulates may scratch eye surfaces and cause mechanical irritation.
SKIN CONTACT	Repeated or prolonged skin contact may result in mild irritation.
INHALATION	This product can produce a nuisance dust which should be maintained below a time weighted average of 10 mg/m3. Dust is irritant to the respiratory tract.

INGESTION	Ingestion may cause irritation of the gastrointestinal tract.

4. FIRST-AID MEASURES

EYE	Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain medical attention.
SKIN CONTACT	Wash skin with soap and water. If symptoms develop, obtain medical attention.
INHALATION	Remove to fresh air. Get medical attention if irritation persists.
INGESTION	Treat symptomatically and supportively. Get medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

5. FIREFIGHTING MEASURES

AUTOIGNITION	Not available
FLASH POINT	Not applicable
EXTINGUISHING MEDIA	CO2; Dry Chemical; Foam; Water Fog
SPECIAL FIREFIGHTING PROCEDURES	Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.
FIRE & EXPLOSION HAZARDS	Product is a finely divided combustible powder and as such constitutes a potential fire hazard. Keep workplace dust levels below the stipulated exposure limits. Product contains low level of organic volatiles which may be emitted at elevated temperatures.
HAZARDOUS COMBUSTION PRODUCTS	Carbon monoxide, carbon dioxide, unknown hydrocarbons.
LOWER EXPLOSION LIMIT (%)	30.0 g/m3
UPPER EXPLOSION LIMIT (%)	Not applicable
MINIMUM IGNITION ENERGY	1000 - 10000 mJ
Kst CLASS	1 = Weak explosion.
Kst VALUE	36.1 bar.m/s

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES	Normal precautions for "nuisance dust" should be observed. Avoid prolonged inhalation of dust. Sweep up or vacuum up and place in suitable container for disposal.

For safety and environmental precautions, please review entire Material Safety Data Sheet for necessary information.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE	Ambient.

HANDLING/STORAGE	Store in a cool, dry area away from heat, sparks or fire. Mechanical handling of the powder on inadequately grounded equipment can result in static electrical discharges. All handling equipment must be properly grounded. Product contains low level of organic volatiles which could accumulate in the unvented headspace of drums or bulk storage vessels. Open drums in well ventilated area. Avoid breathing vapors.
SENSITIVITY TO STATIC ELECTRICITY	Yes
SENSITIVITY TO MECHANICAL IMPACT	No

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION REQUIREMENTS	Local.
EYE PROTECTION REQUIREMENTS	Wear safety glasses with side shields. Protect against dust and particulates.
GLOVE REQUIREMENTS	The use of chemically resistant gloves is recommended.
CLOTHING REQUIREMENTS	Uniforms, coveralls, or a lab coat should be worn.
CHANGE/REMOVAL OF CLOTHING	Remove contaminated clothing and launder before reuse.
WASH REQUIREMENTS	Wash exposed areas with soap and water.
RESPIRATOR REQUIREMENTS	None required under normal handling conditions. Use NIOSH approved dust mask if dust levels are irritating.

9. PHYSICAL AND CHEMICAL PROPERTIES

PURE SUBSTANCE OR MIXTURE	Mixture
PHYSICAL FORM	Powder.
COLOR	Tan
ODOR	Negligible
ODOR THRESHOLD	Not available
PH AS IS	Not applicable
pH IN (1%) SOLUTION	5 - 7
OXIDIZING PROPERTIES	Not applicable
BOILING POINT	Not applicable
MELTING/FREEZING POINT	Not applicable
SOLUBILITY IN WATER	Soluble
PARTITION COEFFICIENT (n-octanol/water)	Not applicable
BULK DENSITY	4 - 8 lb/gal
EVAPORATION RATE	Not applicable
VAPOR PRESSURE (mmHg)	Not applicable
VAPOR DENSITY (air = 1)	Not applicable
VOLATILES	< 7 %
VOLATILE ORGANIC COMPOUNDS	< 10 g/liter
AUTOIGNITION	Not available
FLASH POINT	Not applicable

10. STABILITY AND REACTIVITY

STABILITY	Stable
STABILITY DETAIL	Stable under normal temperature and pressure. Product contains low level of organic volatiles which may be emitted or released in application processes involving the use of heat. Vent all ovens and process vessels to the outside atmosphere.

11. TOXICOLOGICAL INFORMATION

ROUTE OF ENTRY: Eye Contact; Skin Contact; Inhalation; Ingestion

CARCINOGEN	IARC (group)	NTP	OSHA Substance Specific Regulation
COMPONENT			
There is no evidence that this product poses a carcinogenic risk under normal conditions of handling and use.			

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

EFFECTS OF CHRONIC EXPOSURE	Not established.
TARGET ORGANS	Not applicable.

PRODUCT TOXICOLOGY

PRODUCT INFORMATION	Unlikely to cause harmful effects under normal conditions of handling and use.

12. ECOLOGICAL INFORMATION

POTENTIAL TO BIOACCUMULATE	Unknown.
AQUATIC TOXICITY	None Established

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS	Disposal should be in accordance with local, state or national legislation.
EMPTY CONTAINER WARNINGS	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.

14. TRANSPORTATION INFORMATION

This section provided for general information only.
FOR NON-BULK SHIPMENTS.
FOR MORE COMPLETE TRANSPORTATION REGULATORY INFORMATION PLEASE REFER TO THE SHIPPING DOCUMENTS ACCOMPANYING THE SHIPMENT OF THIS PRODUCT.

DOT CLASSIFICATION
PROPER SHIPPING NAME NOT APPLICABLE

The information provided herein may not include the impact of additional regulatory requirements (eg, for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/of marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

15. REGULATORY INFORMATION

USA
TSCA All components are on the TSCA inventory.

SARA/TITLE III	CAS NUMBER	CONCENTRATION (% by weight)
Contains no substances at or above the reporting threshold under Section 313.		

CALIFORNIA PROPOSITION 65
WARNING: This product contains the following chemicals that are known to the State of California to cause cancer, birth defects or other reproductive harm.
Unless a concentration is specified in Section 2 of the MSDS, the below chemical/s are present in trace amounts.

COMPONENT	CAS NUMBER
None reportable.	

16. OTHER INFORMATION

HMIS® Hazard Ratings
HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs by OSHA's 29 CFR 1910.1200, we choose to provide them as a service to our customers using HMIS®. These ratings are to be used only with a fully implemented HMIS® program. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

NPCA recommends that employers must determine appropriate PPE for the actual conditions under which this product is used in their workplace. For information on PPE codes, consult the HMIS® Implementation Manual.

HMIS® is a registered trademark of the National Paint and Coatings Association (NPCA).

Health	Flammability	Reactivity
1	1	0

MSDS DATE	15-December-2008
FOR INFORMATION CONTACT:	Akzo Nobel Surface Chemistry LLC Phone: 1-888-331-6212

ADDITIONAL INFORMATION: The information given and the recommendations made herein apply to our product(s) alone and are not combined with other product(s). Such are based on our research and on data from other reliable sources and are believed to be accurate. No guaranty of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes.

Links

Overview

Paper and Articles

Formulations

Presentations

Sample Order Page