# **MRO CHEMICALS**

INDUSTRIAL LUBRICANTS, CLEANERS, METAL WORKING FLUIDS
AND MAINTENANCE SPECIALTIES





# **CHESTERTON® GLOBAL SOLUTIONS, LOCAL SERVICE**

# Quality Products, Industry Solutions and Superior Services...

The A.W. Chesterton Company was established on the Boston, Massachusetts waterfront in 1884. Today, Chesterton manufactures products that are stocked, sold and serviced by highly trained Chesterton Specialists in more than 97 countries worldwide. We are dedicated to learning the specific requirements of your application in order to tailor recommendations and help you achieve your expected results.

Chesterton's extensive network provides the best applications assistance and service available throughout the process and manufacturing industries. The local, trained Chesterton Specialist, field and product managers, as well as factory support staff are dedicated to worldwide ultimate Customer Care.



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# **CHESTERTON® MRO CHEMICALS**



All statements in this catalog pertaining to pressure, chemical compatibility, temperature, and service ratings are based on general service experience. Because of the wide variety of applications of our products, the broad range of products available, and the wide range of equipment conditions encountered, together with the unpredictable human factors involved in the installation of these products by the ultimate user, we do not encourage reliance on recommendations shown without specific prior service experience.

Specific data on materials, construction methods, installation and troubleshooting procedures are subject to change without notice.

For the reasons indicated, the A.W. Chesterton Company makes no warranties, expressed or implied, that products described are guaranteed for any length of time, for any measure of service, or for any specific purpose.

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# **OVERVIEW**

Chesterton offers products and total system solutions for production process, facility, and maintenance needs.

- INDUSTRIAL LUBRICANTS
- CLEANERS AND DEGREASERS
- MAINTENANCE SPECIALTIES
- METAL WORKING FLUIDS
- CORROSION CONTROL

State-of-the-art technologies, environmentally acceptable alternatives and strict quality processes contribute to fulfilling the customers' expectations:

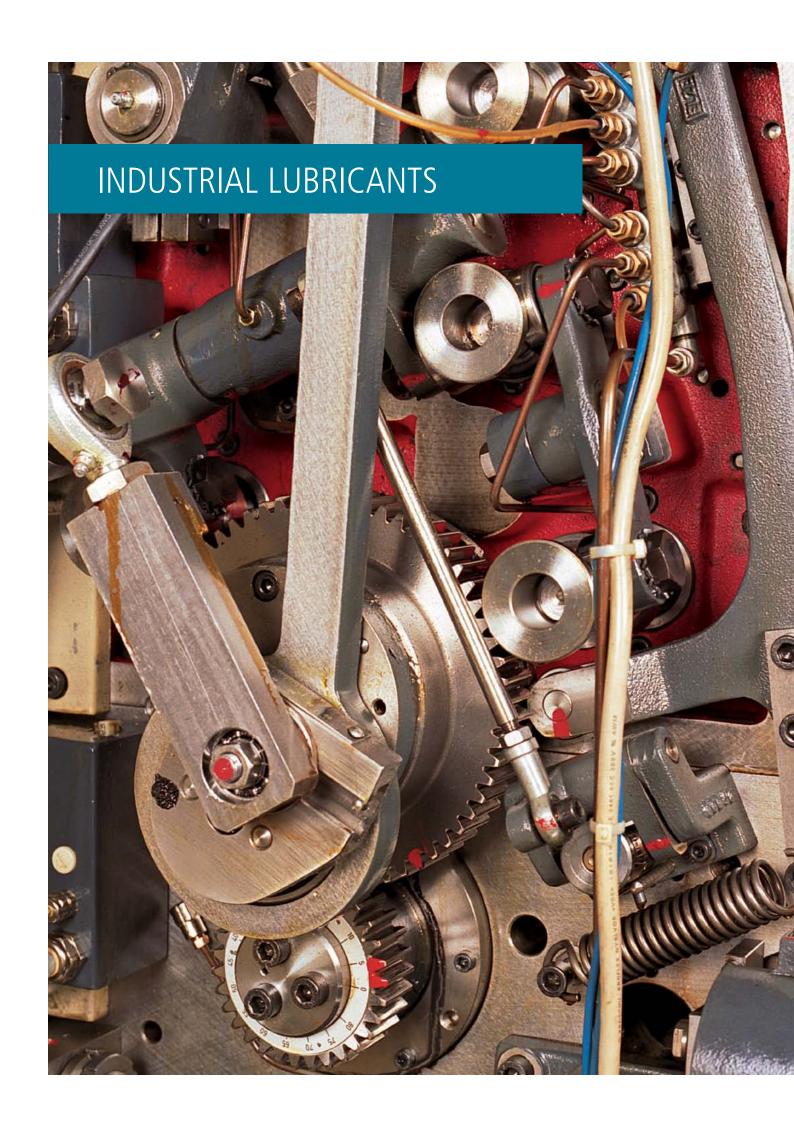
#### Increased productivity Lowered costs Reduced disposal and labor costs

In partnership with our worldwide distribution channels and factory-trained local specialists, Chesterton offers superior value, outstanding customer service, technical support and delivery.

In these pages you will find an overview of our technical products. For in-depth, individual product information, ask your local Chesterton Specialist for our informative product data sheets.

Efficiency, performance and productivity today... tomorrow... always!





#### **MOLY GREASE**

Long lasting multi-purpose, extreme pressure grease; fortified with molybdenum disulfide to handle challenging applications ranging from -18°C to 138°C (0°F to 280°F).

#### **PRODUCT CHARACTERISTICS**

Contains inhibitors protect lubricated equipment Excellent resistance to water washout Saves cost of replacement parts Prolongs the life of parts and machinery





CONTAINER SIZE 613	REORDER NUMBER
400 Gram	089409
18 Kilogram	089407

#### **APPLICATIONS**

Conveyors Mining equipment Plain and anti-friction bearings Cams Guides Ways Slides Electric motors Fans **Blowers Pumps** Generators Presses and shears Ideal for equipment subject to extra pressures, and shock loading vibration at start-up or during operation

# 615

# HTG #1, #2, #2-460

High-performance, corrosion inhibited grease with outstanding extreme pressure capabilities and excellent water washout resistance. Temperature limit -40°C (-40°F) to 204°C (400°F).

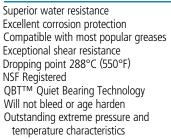
The 615 HTG #2-460 is based on a heavier ISO 460 base oil and is designed for use on slower moving heavily loaded bearings.



#### **PRODUCT CHARACTERISTICS**

Outstanding extreme pressure and temperature characteristics HTG #1 is easily pumpable in automatic grease dispensing systems







615 HTG #1	
400 Gram	086935
18 Kilogram	086936
55 Kilogram	086007
180 Kilogram	080725
CONTAINER SIZE 615 HTG #2	REORDER NUMBER
400 Gram	080042
18 Kilogram	080043
55 Kilogram	080045
181 Kilogram	080728
CONTAINER SIZE 615 HTG #2-460	REORDER NUMBER
400 Gram	084204

084205

084190

18 Kilogram

181 Kilogram

#### **APPLICATIONS**

#### High water environment plants

Pulp and paper mills Mining operations Transportation Coal and ore processing Construction Metal fabrication Steel mills

#### Industrial and marine

Conveyors Grinding mills Crushers Bearings Shears **Blowers** Rolling mills Traveling cranes Mechanical presses Cams Toggle joints Guides Ways Slides





# **WHITE GREASE**

Superior quality, multi-purpose, H1 food grade lubricant, clean, pure mineral oil.

#### **PRODUCT CHARACTERISTICS**

NSF Registered H1
Resistant to water, steam, caustics
and cleaning agents
Virtually colorless, odorless, tasteless
Complies with sections 178.3570 and
177.1550, of FDA food additives regulations
Dropping point 260°C (500°F)



CONTAINER SIZE 622	REORDER NUMBER
400 Gram	085312
900 Gram	085314
18 Kilogram	085304
55 Kilogram	085335

#### **APPLICATIONS**

#### Food industry

Bottling equipment Fruit feeders Paste and sauce fillers Canning machinery Meat packaging equipment Carton filling equipment

#### General

Valves Pistons Pumps Conveyor belts Rollers Machinery Slides Guides



# 629

# HIGH TEMPERATURE WHITE GREASE



High temperature, premium quality, pure mineral oil and PTFE fortified grease. Offers excellent resistance to water, steam, caustics and other cleaning agents.

#### **PRODUCT CHARACTERISTICS**

Chemically stable, non-reactive with metal, rubber and plastics
Virtually colorless
Odorless
Tasteless
Complies with sections 178.3570 and 177.1550, of FDA food additives regulations
Smooth tacky texture
Adheres to metal
NSF Registered
Dropping point over 260°C (500°F)







CONTAINER SIZE 629	REORDER NUMBER
400 Gram	081127
18 Kilogram	081128
55 Kilogram	081187

#### **APPLICATIONS**

Processing and packaging machinery Slides Guides Anti-friction bearings Grease lubricated chains Bottle and carton filling machines Paste and sauce fillers Conveyor belts Rollers Canning machinery Any moving parts of equipment processing clean materials or packages



# **CXF**



High-performance, corrosion inhibited grease with outstanding extreme pressure capabilities and excellent water washout resistance. 625 is NSF Registered H1 and complies with FDA regulations 178.3570. Temperature limit -30°C (-22°F) to 204°C (400°F).

#### **PRODUCT CHARACTERISTICS**

NSF Registered H1
Superior water washout resistance
Excellent corrosion protection
Compatible with most popular greases
Exceptional shear resistance
Anti-oxidants prevent hardening
or crystallization
Dropping point 318°C (604°F)
QBTTM Quiet Bearing Technology



#### **APPLICATIONS**

Food, pharmaceutical, beverage industries Pharmaceutical processing and packaging machines Bottling equipment Fruit feeders Paste and sauce fillers Canning machinery Meat packaging equipment Carton filling equipment



CONTAINER SIZE 625	REORDER NUMBER
400 Gram	088548
18 Kilogram	088549
55 Kilogram	088550
180 Kilogram	088551

#### **630**

# **SXCF**



High-performance, corrosion inhibited grease with outstanding extreme pressure capabilities and excellent water washout resistance. 630 is synthetic based, and offers superior high temperature stability and resistance to steam and cleaning chemicals. 630 is NSF Registered H1 and complies with FDA regulations 178.3570. Temperature limit -40°C (-40°F) to 240°C (464°F).

#### **PRODUCT CHARACTERISTICS**

NSF Registered H1
Superior water washout resistance
Excellent corrosion protection
Compatible with most popular greases
Exceptional shear resistance
Anti-oxidants prevent hardening
or crystallization
Dropping point 318°C (604°F)
QBTTM Quiet Bearing Technology



#### APPLICATIONS

Food, pharmaceutical, beverage industries Pharmaceutical processing and packaging machines Bottling equipment Fruit feeders Paste and sauce fillers Canning machinery Meat packaging equipment Carton filling equipment



CONTAINER SIZE 630	REORDER NUMBER
Aerosol	088687
400 Gram	088552
18 Kilogram	088553
55 Kilogram	088554
180 Kilogram	088555

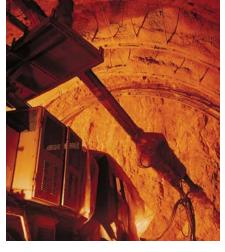
# **SXCM**



High-performance, corrosion inhibited grease with outstanding extreme pressure capabilities and excellent water washout resistance. 633 is synthetic based with MoS<sub>2</sub>, and offers superior high and low temperature stability and resistance to steam and corrosive chemicals. Temperature limit -50°C (-58°F) to 250°C (482°F).

#### **PRODUCT CHARACTERISTICS**

Superior water washout resistance Excellent corrosion protection Compatible with most popular greases Exceptional shear resistance Anti-oxidants prevent hardening or crystallization Dropping point 288°C (550°F) QBTTM Quiet Bearing Technology



CONTAINER SIZE 633	REORDER NUMBER
400 Gram	088560
18 Kilogram	088563
55 Kilogram	088564

#### **APPLICATIONS**

Pulp and paper mills Mining operations Transportation Coal and ore processing Construction Metal fabrication Steel mills

#### Industrial and marine

Heavy off road machines Conveyors Grinding mills Crushers Bearings Shears **Blowers** Rolling mills Traveling cranes





# 635

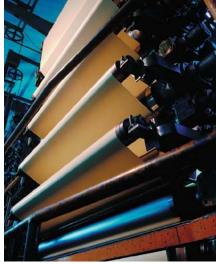
# **SXC**

High-performance, corrosion inhibited grease with outstanding extreme pressure capabilities and excellent water washout resistance. 635 is synthetic based, and offers superior high temperature stability and resistance to steam and corrosive chemicals. Temperature limit -40°C (-40°F) to 240°C (464°F).



#### **PRODUCT CHARACTERISTICS**

Superior water washout resistance Excellent corrosion protection Compatible with most popular greases Exceptional shear resistance Anti-oxidants prevent hardening or crystallization Dropping point 318°C (604°F) QBT™ Quiet Bearing Technology



-0-		
		CONTAI 635
1	ALTER	400 Gran
THE STATE OF THE S		18 Kilogr
		55 Kilogr
4		180 Kilo

#### INER SIZE REORDER NUMBER 088556 088557 ıram ram 088558 088559

#### **APPLICATIONS**

Pulp and paper mills Mining operations Transportation Coal and ore processina Construction Metal fabrication Steel mills

#### Industrial and marine

Ovens Hot process fluid systems Fans Conveyors Grinding mills Crushers Bearings Shears **Blowers** Rolling mills Traveling cranes



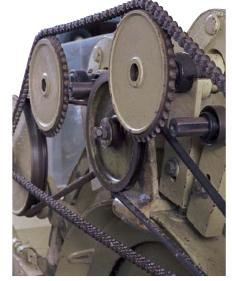
# **CHAIN DRIVE PIN & BUSHING LUBRICANT**



Premium quality light oil, penetrates between the close clearance of chain drive bushings and pins to provide critical lubrication. The lubricant of choice in the industry for over 30 years.

#### **PRODUCT CHARACTERISTICS**

Rapid penetration
Pressure additives increase load
carrying ability at start up stresses
No dirt and dust build up in chains
No sticky lubricant residues
Corrosion inhibiting properties
Extends chain life 2 to 4 times
Long lasting, non-drying film
NSF Registered



#### **APPLICATIONS**

Chain drives
for assembly lines
Conveyors
Packaging equipment
Hoist chains
Link and
roller assemblies
Forklift trucks
Tractors
Machinery
Chain saws
Robotic equipment
lubricant





CONTAINER SIZE 601	REORDER NUMBER
Aerosol	081902
1 Gallon/3.8 Liter	081904
20 Liter	081910
208 Liter	081907

610

# **SYNTHETIC LUBRICATING FLUID**

610HT

Premium quality 100% synthetic fluid cleans as it lubricates over a wide temperature range of -25°C to 270°C (-13°F to 518°F).

610MT Plus

#### **PRODUCT CHARACTERISTICS**

Self cleaning

610MT Plus

610HT

No residue
Non-carbonizing
NSF Registered
Low evaporation rate
High flash point
Good flowability for low temperature
applications to —25°C (—13°F)
610MT Plus and 610HT higher viscosities,
reducing dripping, recommended for chains
operating continuously over 180°C (356°F)
Viscosity, ISO VG
610
68







220

460



CONTAINER SIZE 610	REORDER NUMBER
Aerosol	089411
1 Gallon/3.8 Liter	089415
20 Liter	089414
208 Liter	089424

CONTAINER SIZE 610HT	REORDER NUMBER
1 Gallon/3.8 Liter	083765
20 Liter	080418
208 Liter	080419

CONTAINER SIZE 610MT Plus	REORDER NUMBER
20 Liter	082852
208 Liter	082853

#### **APPLICATIONS**

On equipment operating in elevated temperatures, refrigerated areas and in severe environments

Oven chains
Anti-friction bearings
Gearboxes
Conveyor roller bearings
Chain conveyors
Drying ovens
Ceramic ovens
Heat treating conveyors
Electric motors
Fans
Plastic extrusion
equipment
Plastic film forming
Textile tenter frames

# **FG SLF-220**



636 FG is an ISO grade 220, high performance synthetic lubricant. It is NSF H1 registered, and specifically designed as for high temperature bearing, chain lubrication throughout the food, beverage and pharmaceutical industries.

#### PRODUCT CHARACTERISTICS

Self-Cleaning
No Residue
Non-Carbonizing
NSF Registered H1
Low Evaporation rate
High Flash point
Temperature Range -25C to >260C
(-13F to 500F)



CONTAINER SIZE	REORDER NUMBER
Aerosol	084128
20 Liter	084129
208 Liter	084127

#### **APPLICATIONS**

High temperature lubrication such as:
Baking ovens
Heat sealing machines
Sterilization areas
Conveyor roller bearings
Chain conveyors
Heat treating conveyors
Plastic film sealing



# **DETERGENT LUBRICATING OIL**



651

All purpose, light duty lubricant with active detergent additives to clean, penetrate, lubricate, and prolong the life of all types of parts and equipment.

#### **PRODUCT CHARACTERISTICS**

Cleans as it lubricates
Will not build-up
Penetrates close tolerances
Cleans old sludge and gumming
Ideal for high speed industrial bearings
NSF Registered
Safe and easy to use
Reduces maintenance
and replacement parts cost







CONTAINER SIZE 651	REORDER NUMBER
Aerosol	081102
20 Liter	081111
208 Liter	081107

#### **APPLICATIONS**

#### General

Pneumatic equipment
Electric motors
Chronometers
Amplifiers
Machine shops
Instrument repair shops
Boiler rooms
Assembly lines
Bearings
Linkages
Levers
Hinges

#### **NOTE**

For chain drive applications Chesterton's 601 Chain Drive Pin & Lubricant may also be used



# PNEUMATIC LUBRICANT & CONDITIONER



High performance, low viscosity formulation reduces up to 90% of pneumatic maintenance costs, decreases downtime and rejects. Cleans, protects and prolongs the life of pneumatic equipment.

#### **PRODUCT CHARACTERISTICS**

Will not cause sludge build-up NSF Registered Conditioners prevent seals and O-rings from drying out Significantly reduces power consumption Prolongs life of air tools Cleans rust, sludge and dirt from all air tools as it lubricates



#### **APPLICATIONS**

Air tools
Cylinders
Air line lubricators
Air impact wrenches
Air hammers
Air drills
Air grinders
Production air systems
CNC machines
Robotics
Assembly line tools





CONTAINER SIZE 652	REORDER NUMBER
475 Milliliter	086888
1 Gallon/3.8 Liter	080447
20 Liter	086000
208 Liter	083018

# 660

# **SILICONE LUBRICANT**



Clean, clear, colorless food-grade lubricant for plastics, rubber, and food processing equipment that works where petroleum oils won't.

#### PRODUCT CHARACTERISTICS

Broad temperature range
—40°C (—40°F) to 205°C (401°F)
NSF Registered H1
Complies with sections 178.3570, 181.28 and
178.3910 of FDA food additives regulations
Makes surfaces water-resistant
Non-staining, fire-resistant, non-toxic
Penetrates fine tolerances
Long-lasting









CONTAINER SIZE 660	REORDER NUMBER
Aerosol	081502
1 Gallon/3.8 Liter	081504
20 Liter	081519
208 Liter	081506

#### **APPLICATIONS**

Plastic to plastic, plastic to metal, and rubber to metal lubrication

#### Food processing

Plastic gears Rollers Cams Hinges Slides Bearing mixers Conveyors

#### Otne

High-speed injection molding Medical and pharmaceutical equipment Rubber gasketing Sliding doors



# 662FG

# **BARRIER FLUID**



662 FG is an ISO grade 22, high performance lubricant specifically designed as a barrier fluid for mechanical seals. We now offer a complete Chesterton solution—mechanical seal, barrier fluid tank, and barrier fluid.

#### PRODUCT CHARACTERISTICS

#### Ultra clean for long seal face life:

Ultra clean barrier fluid—extremely low particle count designed to minimize face wear and extend seal life

ISO 4406 particle count 14/12/10

# Food grade (FG)—minimize contamination concerns:

NSF H1 registered, incidental food contact FDA: Conforms to FDA 21 CFR 178.3620 a & b 178.3570

#### Good thermal stability:

Minimize carbon formation and resulting seal clogging and hang up
Maintains seal face lubrication
Viscosity: < 4 cSt (ISO 22) at 100°C, ideal for convectional heat transfer

#### **Cost Effective:**

Long term stability minimizes replacement seal and fluid costs

#### Compatibility:

Compatible with most fluids (mineral oil, PAO, and diester: not miscible with glycols or silicones)



CONTAINER SIZE 662FG	REORDER NUMBER
20 Liter	081088
208 Liter	081089

#### **APPLICATIONS**

Mechanical seal barrier fluid For high temperatures, above 120°C (250°F) use 610 Synthetic Fluid

# 690FG

# **LUBRICANT**



Cost effective, high quality, multi-purpose, non-staining penetrating lubricant. USDA authorized for incidental food contact and meets FDA standards.

#### **PRODUCT CHARACTERISTICS**

Clear, colorless, odorless Complies with section CFR 178.3620 of FDA food additives regulations High flash point, 171°C (340°F) Safe and easy to use in bulk or aerosol NSF Registered H1









CONTAINER SIZE 690FG	REORDER NUMBER
Aerosol	082706
1 Gallon/3.8 Liter	082703
20 Liter	082710
208 Liter	082705

#### **APPLICATIONS**

#### Food industry

Bottle, canning and carton filling machines Paste and sauce fillers Fruit feeders Bakery equipment Mixers Metering pumps Chain drives Piston and valves Rollers

#### NOTE

For food processing equipment and non-staining applications requiring a long lasting grease, use 622 White Grease or 629 High Temperature White Grease For food contact at higher temperature applications, use 660 Silicone Lubricant, up to 205°C (401°F)



# **ANTI-SEIZE COMPOUND**



High temperature, extreme pressure, corrosion resistant anti-seize compound and assembly lubricant. Formulated blend of copper, aluminum, and graphite seals and protects metal parts.

#### **PRODUCT CHARACTERISTICS**

Eases disassembly up to 1100°C (2012°F)
Meets MIL-A-907D
Maintains electrical conductivity
between surfaces
On U.S. Navy qualified products list: QPL-907
NSF Registered
Retards pitting
Saves threads and parts for reuse
by guarding against galling damage and
breakage during opening



CONTAINER SIZE 710	REORDER NUMBER
500 Gram Brush Top	082309

#### **APPLICATIONS**

Refineries Steel Mills Mining Chemical and petroleum Utilities Vehicles/Transportation Marine Valves Threaded assemblies Press fit bushings Bearing fits Pump sleeves Forge presses Hydraulic equipment Heat exchangers Reactor towers

#### NOTE

Chesterton's 725
Nickel Anti-Seize
Compound or 785
Parting Lubricant
is recommended on
stainless steel and
in aggressive acid or
alkaline environments

**APPLICATIONS**Power plants

Marine applications

Automotive industry

Chemical plants

Boiler rooms

Oil refineries

Steel mills

General

Bolts

Screws

Studs

Pipe threads Press fits Pump sleeves Splines



# **785**

# **PARTING LUBRICANT**

**785FG** 

The "new generation" anti-seize compound contains a blend of ultrafine, inorganic solid lubricants in a non-carbonizing, ashless synthetic carrier. Withstands severe temperature and pressure conditions.

#### **PRODUCT CHARACTERISTICS**

Provides excellent protection of metal components under extreme conditions
Eases disassembly up to 1204°C (2200°F)
Fills in microscopic voids
No toxic heavy metals
For extreme pressure
up to 4730 kg/cm² (67,570 psi)
Safer than traditional metallic based anti-seizes
Non-carbonizing
Usable under most extreme conditions
No need for torque tension recalculation
NSF Registered



CONTAINER SIZE 785	REORDER NUMBER
Aerosol	081664
200 Gram Tube	086907
250 Gram Brush Top	082016
500 Gram Brush Top	080747
24 Kilogram	080748

CONTAINER SIZE 785FG	REORDER NUMBER
200 Gram Tube	088506
500 Gram Brush Top	080788









### **NICKEL ANTI-SEIZE COMPOUND**

772

A high performance, nickel based anti-seize. Combines the extreme pressure, corrosion resistant anti-seize abilities of colloidal nickel, in an oil suspension that can withstand temperatures up to 1425°C (2597°F).



#### **PRODUCT CHARACTERISTICS**

Water resistant; ultra fine particles
Eases mechanical assembly and disassembly
up to 1425°C (2597°F)
Balanced coefficient of friction
eliminates torque recalculations
Guards against galling and corrosion
protects against self-welding
Meets MIL-A-907F
Withstands extreme pressure
NSF Registered
Applicable where copper use is prohibited



# APPLICATIONS

Automotive Chemical industries Foundries Utilities Refineries

# Mechanical assembly of

Bolts, studs, flanges, pressfits, valve stems, pump sleeves, screws, bushings, gaskets, bearings, etc.

#### Use on

Steel Stainless steel Iron Aluminum Copper Brass Titanium

#### **CAUTION**

Should not be used on oxygen systems



CONTAINER SIZE 725	REORDER NUMBER
Aerosol	082351
250 Gram Brush Top	081266
500 Gram Brush Top	082359
20 Liter	082349

CONTAINER SIZE 772 PREMIUM NICKLE ANTI-SEIZE	REORDER NUMBER
500 Gram Brush Top	082381

# **783**

# **ACR**

783 combines high performance industrial anti-seize performance with extreme corrosion protection and water washout resistance. 783 is ideal where the primary cause of bolt seizure is corrosion.

#### **PRODUCT CHARACTERISTICS**

Provides excellent protection of metal components under extreme conditions
Extreme corrosion protection and water washout resistance
Eases disassembly up to 900°C (1652°F)
Fills in microscopic voids
No toxic heavy metals
For extreme pressure up to 8928 kg/cm² (127,000 psi)
Safer than traditional metallic based anti-seizes
Usable under most extreme conditions



#### **APPLICATIONS**

Marine
Offshore oil platforms
Chemical plants
Waste water
Mining industry
Metal Fabrication
Pulp and Paper

#### General

Bolts Screws Studs Pipe threads Press fits Pump sleeves Splines





CONTAINER SIZE 783	REORDER NUMBER
250 Gram Brush Top	082805
500 Gram Brush Top	088653
500 Gram Open Top	088771
20 Liter Pail	088654



# SPRAFLEX<sub>®</sub>/SPRAFLEX<sub>®</sub> GOLD



A surface lubricant for chain drives, open gears and wire rope. Bonds a long lasting, non-extruding "wear shield" to protect equipment operating under heavy loads.

#### **PRODUCT CHARACTERISTICS**

Non-drip
Self adhering, flexible lubricant
Water resistant
Resistant to acid fumes
Guards against rust and corrosion
Resists extrusion
NSF Registered
Replaces lubricant at every revolution



# Conveyor chains **NOTE**

Use Chesterton's 715 Spraflex Gold where a clean, non-staining film is needed

APPLICATIONS
Chain drives

Wire ropes and cables Textile equipment

Open gears

Paper making

machinery

Drag lines Rotary kilns/dryers Rotary feeders

Debarking drums
Dams and lock gates

Hoists





CONTAINED CIZE	DEODDED MUMBED
208 Liter	081707
20 Liter	081709
Aerosol	081702
715	

CONTAINER SIZE 715-GOLD	REORDER NUMBER
Aerosol	082015
1 Gallon/3.8 Liter	081896
20 Liter	081897
208 Liter	081898

#### **787**

# **SLIDING PASTE**



A semi-solid, pure synthetic base, high performance, extreme pressure lubricant. Leaves a solid lubricating film long after other lubricants have disappeared, without varnishing, up to 538°C (1000°F).

#### **PRODUCT CHARACTERISTICS**

Pure, non-carbonizing synthetic base Lubricates at pressures to 10687 kg/cm² (152,000 psi) Excellent water washout resistance Non-fling, clinging lubricant Low coefficient of friction Low environmental impact Fortified with graphite and molybdenum disulfide NSF Registered





CONTAINER SIZE 787	REORDER NUMBER
500 Gram Brush Top	086803
1 Gallon/3.8 Liter	086805
20 Liter	086806

#### **APPLICATIONS**

Smelting
Forging
Metal refining
Chemical plants
Petrochemical plants
Foundries

#### Other

Wire ropes Crane cables Railroad switch gear Open gears Rack and pinion tracks



787



# **CLEANING PROPERTIES**

WATER BASED – Alkali, pH 7 – 14	<b>Chesterton Products</b>
Petroleum oil and grease	218 HDP
Natural oils/Greases – animal, plant, fish	235 SSC
Dust/Dirt carbon black	360 Phosphate-Free Cleaner
	801 Industrial & Marine Solvent
	803 Industrial & Marine Solvent II
	820 KPC

WATER BASED – Acid, pH 0 – 7	<b>Chesterton Products</b>
Inorganic deposits	338 Super Rust Remover
Hardwater	346 Descaler
Etch and clean concrete	& Chemical Cleaner
Metal oxides – rust, aluminum oxide	

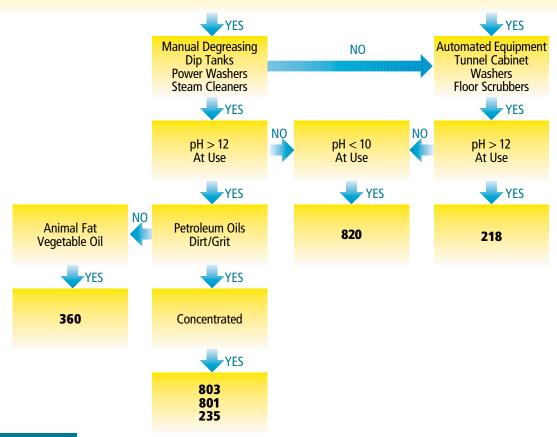
SOLVENT BASED – Petroleum	Chesterton Products
Petroleum oil and grease	274 Industrial Degreaser
Adhesives	276 Electronic
Rubbers	Component Cleaner
Mold release	277 Metal Surface Degreaser
Paints/Coatings	292 Precision Degreasing Solvent
Plastics	294 CSD

SOLVENT BASED – Halogenated	Chesterton Products
Energized electrical equipment	273 Electric Motor Cleaner
Electric motors	279 PCS
Electrical controls	296 Electro Contact Cleaner
Difficult organic soils	



# **AQUEOUS CLEANERS/DEGREASERS**

#### **ALKALINE CLEANERS/DEGREASERS**



218

# **HDP**



Heavy duty, concentrated, virtually non-foaming, liquid alkaline degreaser. Designed with the environment in mind, yet it handles tough degreasing applications.

#### PRODUCT CHARACTERISTICS

Excellent rinsability
Corrosion inhibited
No silicones
Non-flammable
No hazardous powder dust
No toxic solvents
No phosphates
Can be used in food plants
No EDTA
NSF Registered
Dye and fragrance free



# CONTAINER SIZE 218 REORDER NUMBER 20 Liter 083001 208 Liter 083002

#### **APPLICATIONS**

Spray booth washers Floor scrubbers High pressure washers Steam cleaning equipment

#### NOTE

Chesterton's 218 HDP can be used up to 82°C (180°F)



# **SSC**



Powerful cleaner removes oily and greasy deposits, waxes, loose paint and heavy soils. Specially formulated for steam cleaning equipment.

#### PRODUCT CHARACTERISTICS

Additives retard scale build-up and clogging of steam cleaning equipment Water based Concentrated Highly dilutable Biodegradable Non-flammable Contains strong alkalis, emulsifiers and surfactants No irritating fumes NSF Registered



# General Concrete Masonry Equipment (all types)

Pulp and Paper
Papermaking machines

**APPLICATIONS** 

#### Textile

Clothing machinery

#### **CAUTION**

Should not be used on aluminum or metals sensitive to high alkalinity When using on painted surfaces, test small area for compatibility





CONTAINER SIZE 235	REORDER NUMBER
20 Liter	080032
208 Liter	080033

# 360

# **PHOSPHATE-FREE CLEANER**





#### PRODUCT CHARACTERISTICS

Environmentally friendly
Removes inorganic and
light to medium organic soils
Saponifies animal fat and vegetable oil
High stable foam
Biodegradable
Non-flammable
Solvent-free
NSF Registered
Approved by USCG
Water soluble
Highly concentrated
Highly dilutable







CONTAINER SIZE 360	REORDER NUMBER
20 Liter	083603
208 Liter	083607
1000 Liter	086562

#### **APPLICATIONS**

#### Food industry

Federally inspected meat and poultry plants Food processing equipment Bottling machines Wax and grease removal from vents, stoves, hoods and drains

#### Waste water treatment

Floors Pump stations Sludge removal Fungi removal

#### Marine

Decks, Hulls, Bilges

#### Industrial

Floors, walls, vinyl tiles Concrete Machines Machine shop tools Gutters

#### **CAUTION**

Do not use on aluminum



# **INDUSTRIAL & MARINE SOLVENT**

Industrial strength, multi-purpose water based degreaser.



#### **PRODUCT CHARACTERISTICS**

Concentrated Wide dilution range Non-flammable Biodegradable Stable, clinging foam NSF Registered Approved by USCG Economical, efficient



Remove	es
from	pa

cutting oils arts prior to inspection, assembly and shipping

**APPLICATIONS** Machine shop/

Maintenance

#### Marine

Removes rot, mildew and fungi from hulls

#### Food industry

Food processing equipment Ventilation hoods/fans Floors/drains

#### **CAUTION**

Do not use on metals sensitive to attack by alkaline materials



CONTAINER SIZE 801	REORDER NUMBER
20 Liter	083202
208 Liter	083205

# 803

# **INDUSTRIAL & MARINE SOLVENT II**



A powerful, non-solvent based degreaser. Its advanced surfactant technology offers maximum efficiency in soil removal, especially applications where solvent use is required.

#### PRODUCT CHARACTERISTICS

Effective for industrial cleaning dust, dirt, carbon black petroleum based oils Phosphate-free Biodegradable Free of Butyl Cellosolve† No EDTA Free of toxic solvents Concentrated Highly dilutable Tough on viscous, heavy soils Non-flammable No irritating fumes Can be used hot or cold Compatible with pressure washers and steam cleaners **NSF** Registered







CONTAINER SIZE 803	REORDER NUMBER
1 Gallon/3.8 Liter	086774
20 Liter	090379
208 Liter	090388
1000 Liter Tote	086768

#### **APPLICATIONS**

#### Pulp and paper industry

Cleaning production equipment

#### Chemical/ Oil processing

Production facilities

#### Food industry

Concrete floors Masonry walls Engine blocks Railroad equipment Farm implements Construction equipment and other hard surfaces

#### **CAUTION**

Should not be used on aluminum or metals sensitive to high alkalinity When using on painted surfaces, test small area for compatibility



# **KPC**

820N

Balances powerful performance with environmental compliance and worker safety, the ideal choice for process degreasing.

#### **PRODUCT CHARACTERISTICS**

Moderate pH
Low residue
No harsh alkalis
Phosphate-free
Non-flammable
Non-toxic
Biodegradable
Highly dilutable
Safe on most metals
NSF Registered
No offensive odor
Effective for dip tank cleaning
when heated to 82°C (180°F)
No Butyl Cellosolve† or 2-butoxyethanol
No EDTA



# APPLICATIONS Quickly and efficiently removes

Oil deposits Soot and exhaust residue Metal working fluids Animal and vegetable fats Lubrication compounds Soils common to industrial production areas Optimum results when using ultrasonic machines, may be heated to 82°C (180°F) to enhance cleaning



† Registered trademark of Union Carbide Corporation



CONTAINER SIZE 820	REORDER NUMBER
20 Liter	082260
208 Liter	082264
1000 Liter Tote	083555

CONTAINER SIZE 820N**	REORDER NUMBER
20 Liter	088584
208 Liter	088585

\*\*USA Formulation

# **ACID CLEANERS/DEGREASERS**

# ACID CLEANERS YES Rust Removal YES YES Is Muriatic Acid Accepted YES 338 Muriatic Acid Accepted YES 346

# **SUPER RUST REMOVER**

Removes rust from ferrous metals, corrosion from aluminum, brightens copper, brass, stainless steel, and zinc quickly and safely.

#### **PRODUCT CHARACTERISTICS**

Highly concentrated, acid based
Can be used on all metals
Removes metal oxide layer
Brightens non-ferrous metals
Leaves metal paint ready
Inhibited to protect base metals
Biodegradable
Water based
Non-flammable
Rinses clean with water
Short term corrosion protection coating





CONTAINER SIZE 338	REORDER NUMBER
20 Liter	085904
208 Liter	085907

#### **APPLICATIONS**

#### General

Metal prefinishing of vehicle bodies Chassis Appliances Machined parts Machine tool frames Sheet metalwork

#### Maintenance

Restores rusted inventories Nuts/Bolts Threaded assemblies Internal corrosion Shafts Cast housings

#### 346

# **DESCALER & CHEMICAL CLEANER**

Strong, acid based multi-use liquid formulated with metal protecting inhibitor for a wide range of applications.



Biodegradable Water based Non-flammable Dissolves rust and

Dissolves rust and scale
while protecting base surface
Concentrated hydrochloric base
Versatile
Efficient

Efficient

Economical, saves on labor, maintenance costs and fuel consumption NSF Registered





CONTAINER SIZE 346	REORDER NUMBER
20 Liter	088403
208 Liter	088407

#### **APPLICATIONS**

#### Removes hard water build-up, lime scale and corrosion from

Steam boiler tubes Condenser water systems Water circulating equipment

#### General

Etches concrete Cleans stained concrete Removes cement build-up from equipment

#### **CAUTIONS**

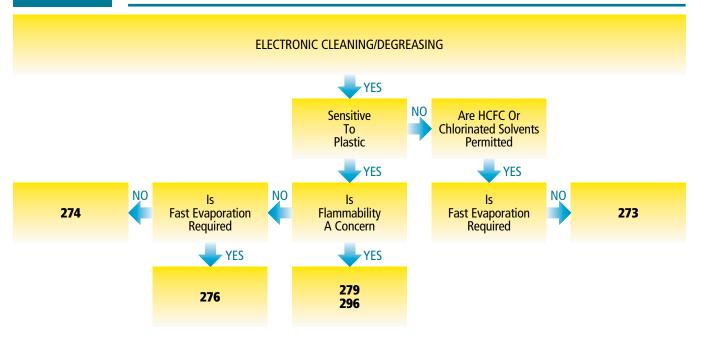
Not effective on grease, oil and common soil Not for use on aluminum, painted enamel, stainless steel or decorative metals

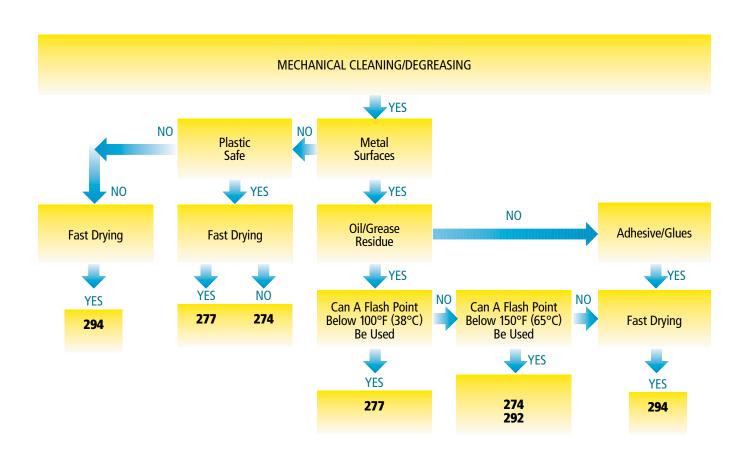
#### NOTE

For detailed application instructions please refer to the product data sheet



# **SOLVENT CLEANERS/DEGREASERS**





# **INDUSTRIAL DEGREASER**



An industrial and marine environment, hard surface degreaser.

#### **PRODUCT CHARACTERISTICS**





#### **APPLICATIONS**

Metal production shops Paint shops Boiler rooms Repair shops Ship yards Maintenance shops Dip tanks Hard surfaces Machined parts Recirculating and agitated parts washer Metal parts Equipment



CONTAINER SIZE 274	REORDER NUMBER
Aerosol	081676
1 Gallon/3.8 Liter	081278
20 Liter	081006
208 Liter	081013

#### **294**

# **CSD**



A fast acting, general purpose industrial degreaser engineered to reduce the time consumed on mechanical maintenance operations and costly downtime.

#### PRODUCT CHARACTERISTICS

Fast evaporation No residue Safe on all metals Safe on most plastics, rubbers and coatings - test prior to use Low aromatic content No HCFC, CFC, TCE, n-PBr Removes dust, dirt, oil and other industrial soils Dissolves resins, polymers, adhesives and petroleum residues Flash point (ASTM D 93, DIN 51 755) <-18°C (<0°F)









CONTAINER SIZE 294	REORDER NUMBER
Aerosol	080783

#### **APPLICATIONS**

Chains and cables Gear boxes Dies and molds Bearings Air tools Pneumatic tools Fork lifts Brakes and clutches Material handling equipment Parts and tools

#### **CAUTION**

294 CSD should not be used on energized electrical equipment or near ignition sources.



# **ELECTRONIC COMPONENT CLEANER**



Fast evaporating, high performance, solvent based degreaser containing no ozone depleting solvents.

#### PRODUCT CHARACTERISTICS

Fast evaporation rate Low residue Non chlorinated Safe for use on all metals No ozone depleting materials NSF Registered



CONTAINER SIZE 276	REORDER NUMBER
Aerosol	081622
20 Liter	081623
208 Liter	081624

#### **APPLICATIONS**

#### Spray cleaning

Switches
Controllers
Panel meters
Circuit boards
Contacts
Levers
Control panels

# Hard surface degreasing

Equipment Motors Non-energized electrical equipment Parts in process



# **METAL SURFACE DEGREASER**



A fast acting, low residue, non-chlorinated industrial strength degreaser designed to penetrate oils, greases and other soils.

#### **PRODUCT CHARACTERISTICS**

Fast evaporating degreaser
Safe for use on all metals
Low aromatic content
Strong flushing action
Removes dust, dirt, oil and
other industrial soils
Low residue
No ozone depleting chemicals
or suspected carcinogens
NSF Registered



CONTAINER SIZE 277	REORDER NUMBER
Aerosol	083236
20 Liter	083432
208 Liter	083433

#### **APPLICATIONS**

#### General

Roller bearings
Slides
Hinges
Valves and fittings
Motors
Chain drives/Sprockets
Moving mechanisms
Delicate precision
instruments
Parts in process
Equipment



# **ELECTRIC MOTOR CLEANER**



Removes grease, sludge, dirt from motors and electrical equipment while operating up to 240 volts. One of the few such products classified by Underwriters Laboratories as non-flammable.† **PRODUCT CHARACTERISTICS** 

Non-flammable Effectively degreases electric motors while operating up to 240 volts High dielectric strength Non-conductive Non-corrosive **NSF** Registered Removes heavy and light oil and grease and organic residues

Evaporates quickly, no residue



† Classified by Underwriters Laboratories, Inc., as to fire hazard only. Spray does not propagate flame. Deposited liquid residue is classified as non-flammable





CONTAINER SIZE 273	REORDER NUMBER
Aerosol	080502
20 Liter	080514
208 Liter	080517

#### **APPLICATIONS**

Electronic equipment Electric motors Fuse holders **Blowers** Fans Hoists Switches Transformers Cables Control panels Motor windings Circuit boards Electrical test equipment Motorized instruments

#### **NOTE**

On plastic, paint or rubber, test small area prior to use Re-lubricate as necessary

# **PCS**



A clear, low-odor non-ozone depleting precision cleaning solvent. State-of-the-art HFE technology removes light oils, particulates, Krytox<sup>†</sup> grease, fluoropolymers and other contaminants from electrical and electronic contact and assemblies.

#### PRODUCT CHARACTERISTICS

Non-flammable Fast evaporating Low residue Non-corrosive High purity High dielectric strength No ozone depleting potential No VOC's Replaces CFC-113 Safe on plastic NSF Registered



† Krytox is a registered trademark of E.I. du Pont de Nemours





CONTAINER SIZE 279	REORDER NUMBER
Aerosol	083434

#### **APPLICATIONS**

#### Electronics

Electrical/Electronic equipment Motorized instruments

#### Medical industry

Medical devices Oxygen lines and valves

#### General

Gyroscopes Delicate instrumentation

#### 279 Materials Compatibility

All metals Plastics Elastomers

#### **NOTE**

For the complete materials compatibility chart and product information, please consult 279's product data sheet or contact your local representative

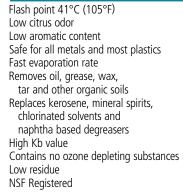


# PRECISION DEGREASING SOLVENT

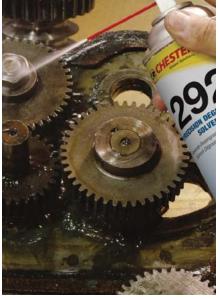


Fast evaporating, low odor, industrial strength solvent blend cleans equipment instantly before disassembly, maintenance and repair.

#### **PRODUCT CHARACTERISTICS**







CONTAINER SIZE 292	REORDER NUMBER
Aerosol	080529
20 Liter	080563
208 Liter	080564

#### **APPLICATIONS**

Bearings
Pulleys
Valves and fittings
Chains
Cables
Molds
Lathes
Presses
Production tools
Finished parts
Non-energized electrical,
equipment, motors,
switches and
controllers

#### NOTE

May attack some rubber and plastics. Test prior to use

# 296

# **ELECTRO CONTACT CLEANER\***



New generation precision cleaning solvent designed to replace CFC-113, HCFC-141b and other ozone depleting materials.

#### **PRODUCT CHARACTERISTICS**

Non-flammable
No VOC's
No ozone depleting potential
Fast evaporating
Safe on plastics
Low residue, high purity
Non-corrosive
High dielectric strength
Restores and improves electrical continuity
on energized equipment
Removes fluorinated lubricants
NSF Registered



\*Not available in EME





CONTAINER SIZE 296	REORDER NUMBER
Aerosol (not available in bulk)	080631

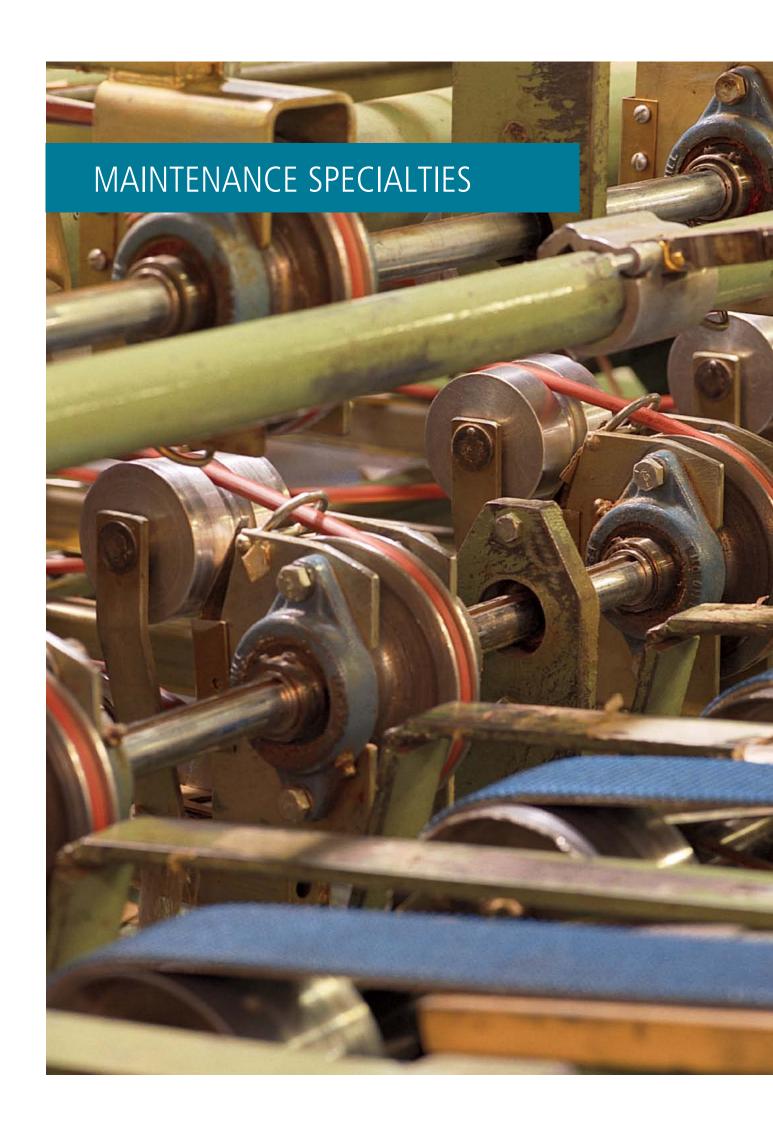
#### **APPLICATIONS**

Switches
Controllers
Panel meters
Circuit boards
Contacts
Levers
Motorized instruments
Medical devices
Control panels

# Hard surface degreasing of

Equipment Motors Parts in process





# **RUSTSOLVO**®

High quality, fast acting, penetrating oil reaches inaccessible areas and frees frozen nuts, bolts, and fittings without damaging the base metal.

#### **PRODUCT CHARACTERISTICS**

Singular function
Safe on plastic and painted surfaces
Extremely low surface tension
NSF Registered
Contains no glycols, alcohols, DMSO
(dimethylsulfoxide) or chlorinated solvents
Pleasant odor
No compromise — best possible penetration
Creeps into microscopic spaces
Chesterton Sprasolvo⊚ is the same
fast acting, penetrating oil in aerosol form



CONTAINER SIZE 706	REORDER NUMBER
1 Liter	081310
20 Liter	081312
209 Liter	091207

#### **APPLICATIONS**

Use on all corroded or seized threaded assemblies

Plumbing
Machinery
Trucks
Pipelines
Railroads
Tractors
Steam and gas fittings
Valves and Pumps
Drilling utilities
Auto shops
Ships

#### NOTE

Use Chesterton's 601
Chain Drive Pin &
Bushing Lubricant
when light lubrication
is required and 775
Moisture Shield as
a moisture displacing
corrosion inhibiting
coating



# 723 SPRASOLVO<sub>®</sub>

**723FG** 

Fast acting, penetrating oil in a convenient. Excellent for hard to reach areas where rust, tar, grease and dirt may prevent easy removal of nuts, bolts and fittings.

#### **PRODUCT CHARACTERISTICS**

Singular function, pin point spray
Safe on plastic and painted surfaces
Extremely low surface tension
NSF Registered
723FG — Conforms to FDA standard
21CFR 172.884, 178.3620, 178.3650
Contains no acids or chlorinated solvents
Pleasant odor
No compromise — best possible penetration
Creeps into microscopic spaces



CONTAINER SIZE 723	REORDER NUMBER
Aerosol	081308

CONTAINER SIZE REORDER NUMBER 723FG
Aerosol 083770

#### **APPLICATIONS**

Ships
Drilling utilities
Auto shops
Railroads
Pipelines
Tractors
Steam and gas fittings
Trucks
Machinery
Valves
Pumps

#### NOTE

FG designates a
Food Grade Product
Use Chesterton's 601
Chain Drive Pin &
Bushing Lubricant
when light lubrication
is required and 775
Moisture Shield as
a moisture displacing
corrosion inhibiting
coating





#### **SPRAGRIP**®



Superior energy efficient belt dressing in a convenient aerosol package. Lengthens life of leather, rubber, canvas or plastic belts; ends belt slippage for all V, flat and round belts.

#### **PRODUCT CHARACTERISTICS**

Eliminates slippage
No glazing or hardening
Pin point spray
Contains no rosin, asphalt, oil
or aggressive solvents
Saves energy, restores mechanical efficiency
Non-staining
NSF Registered
Collects less dirt, no build-up
Preserves belts in inventory
Waterproofs and prevents slipping
even under the most humid conditions



# Package conveyors Conveyor belts Generators Pumps Compressors Indoor or outdoor applications Controls belt slippage due to moisture, dust, heat and cold Prevents degradation from U.V. rays, chemical fumes and water

**APPLICATIONS**Belt drives

Automotive equipment

Industrial equipment





CONTAINER SIZE 730	REORDER NUMBER
Aerosol	080308

#### 800

# **GOLDEND® TAPE**



Heavy duty, high density, tear resistant, moldable, dry PTFE sealant tape for use on metal or plastic threads, pipes or bolts.

#### PRODUCT CHARACTERISTICS



Temperatures from -240°C (-400°F) to 260°C (500°F) Seals tightly and opens easily UL listed Meets MIL-T-27730A NSF Registered DVGW approval No. 96.01e907 Acceptable for oxygen use Non-aging, non-hardening Chemically resistant Requires fewer wraps Resists tearing and breakage Won't clog fuel lines Adjust fittings without leakage





CONTAINER SIZE 800 - Inch	REORDER NUMBER
1/4" x 540"	000805
1/2" x 180"	000801
1/2" x 540"	000802
1/2" x 1296"	000803
3/4" x 540"	000804
1" x 540"	000806

#### **APPLICATIONS**

# Dry thread sealant for

#### Liquids

Steam, water, salt water air, fuels,refrigerants, acids, alkalies, all solvents

#### Gases

Hydrogen, ammonia, oxygen, propane, butane, nitrogen

#### Other

Seals all plumbing and most industrial piping threads Pneumatic and hydraulic fittings up to 690 bar (10,000 psi)

#### **CAUTION**

For nitric or mixed acid services, consult factory





# **MOLDABLE POLYMER GASKETING**



Two-part, extrudable gasketing material allows for the creation of ultra-thin gaskets in any size, any shape. Never sticks.

# **PRODUCT CHARACTERISTICS**Economical; material costs less than





KITS 860	REORDER NUMBER
Kit	086310
Toolhox kit	084883

#### **APPLICATIONS**

# For sealing complex mechanical assemblies

Gear boxes Inspection covers Transmissions Bearing housings Speed differentials

#### **Sealing surfaces**

Fittings, including thread fittings, hose clamps and o-ring fittings, and compression fittings Oil sumps and reservoirs Turbine casings Electrical boxes Vacuum systems

#### **CAUTION**

Not for use in contact with concentrated acids or hot concentrated caustics



# **GOLDEND® PASTE**



Non-hardening, non-corrosive, moldable PTFE thread sealant and lubricant for the most difficult of sealing demands on pipe joints, pneumatic fittings, and hydraulic line applications.

#### PRODUCT CHARACTERISTICS

Lubricates threads during assembly, seals tightly, opens easily
For use at temperatures
up to 260°C (500°F)
Non-hardening
Non-corrosive
Non-toxic
No volatile solvents
NSF Registered
UL listed







CONTAINER SIZE 900	REORDER NUMBER
200 Gram Tube	000908
250 Gram Brush Top	086852
500 Gram Brush Top	000909
20 Liter	000936

#### **APPLICATIONS**

# Thread sealant and lubricant for

#### Liquids

Water, salt water, fuels, refrigerants, acids, alkalies, solvents

#### Gases

Steam, air, propane, butane, nitrogen and ammonia\*\*

#### Other

Pneumatic and hydraulic fittings Anti-seize sealing to 260°C (500°F) Holds gasket in place during assembly

#### NOTE

Not for use on liquid or gaseous oxygen

\*\* For nitric and mixed acid service, consult factory



# **VALVELON**®



Unique multi-layered, 100% PTFE anti-extrusion construction sealant conforms to surface shapes. Ideal for valve packing and flange gaskets, withstands a wide range of temperatures and seals virtually all chemicals.

#### **PRODUCT CHARACTERISTICS**





CONTAINER SIZE 3500-Metric	REORDER NUMBER
2,4 mm x 15,3 M	003566
4,0 mm x 10,7 M	003570
5,6 mm x 4,6 M	003574
7,1 mm x 2,7 M	003578

CONTAINER SIZE 3500-Inch	REORDER NUMBER
3/32" x 50'	003566
5/32" x 35'	003570
7/32" x 15'	003574
9/32" x 9'	003578

#### **APPLICATIONS**

Generally all substances within a pH range of 0 to 14 Steam, salt water, air, refrigerants, sulfuric acid, hydrochloric acid, nitric acid, chromic acid Sodium hydroxide, potassium hydroxide, kerosene, gasoline, perchloroethylene, hydrogen, ammonia, fluorinated solvents Chlorine, propane, butane, nitrogen

#### **CAUTION**

Do not use on liquid or gaseous oxygen, molten alkali metals and some rare halogenated compounds



#### 989

# **RELEASE COMPOUND**

A concentrated silicone release agent, formulated for use in mold applications operating at temperatures from 60°C (140°F) to 260°C (500°F) without sticking, spotting, or marking.



#### **PRODUCT CHARACTERISTICS**

Non-flammable
Concentrated
Contains no organic solvents
No HCFC's, CFC's, or halogenated compounds
Maximum release without mold build up
Will not oxidize or carbonize
Enhanced worker safety
Fewer costly rejects
Environmentally safe
Finer detail, high gloss finish
Easy to apply



CONTAINER SIZE 989	REORDER NUMBER
20 Liter	081693



# Ideal for the following molding operations

Sand core operations Investment casting Injection molding Thermosets Thermoplastics **Suitable for** 

Acrylic Cellulosic(s) Polystyrene Polyester Polyurethane Rubber







### **RELEASE AGENT**



Concentrated formulation for use in all mold applications. Up to 20% more releases per application, increases production rates, and reduces costly rejects.

### **PRODUCT CHARACTERISTICS**

Unique, complex silicone polymer Contains no CFC's, chlorinated solvents, or halogenated compounds Multiple releases per application No mold build up, leaves mold cleaner Easy to apply High gloss, wet look finish Fewer rejects Finer detail Faster cycling



# APPLICATIONS Ideal for the following molding operations

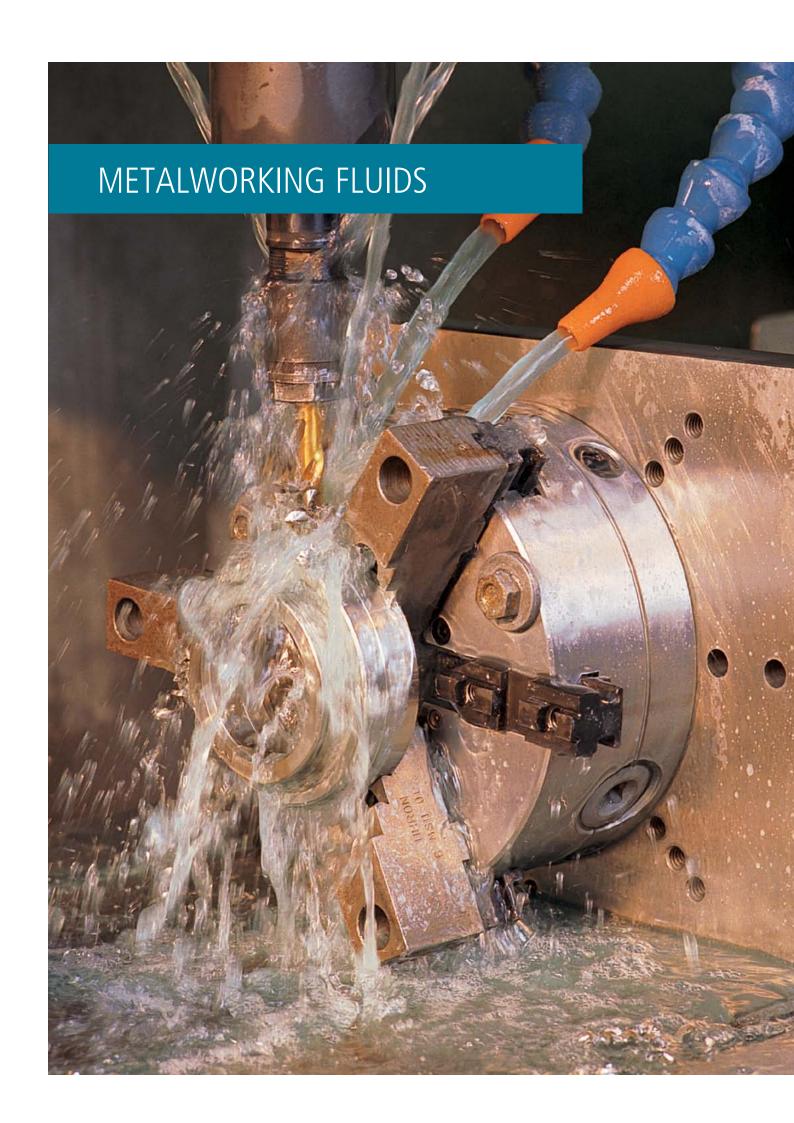
Sand core operations Investment casting Injection molding Thermosets Thermoplastics Suitable for

Acrylic Cellulosic(s) Polystyrene Polyester Polyurethane Rubber





CONTAINER SIZE 995	REORDER NUMBER
Aerosol	081675
20 Liter	081779
208 Liter	081860

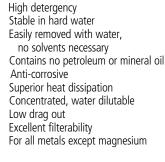


### **MACHINERY COOLANT**



Full synthetic, biodegradable, water soluble coolant that is formulated to be resistant to microbial attack. Excellent lubricity and heat dissipating properties extend tool life.

### **PRODUCT CHARACTERISTICS**





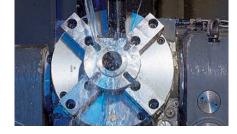
CONTAINER SIZE 380	REORDER NUMBER
20 Liter	080091
208 Liter	080175

#### **APPLICATIONS**

Broaching Drilling Grinding Machining Milling Reaming Sawing Tapping Turning

### NOTE

For recommended dilutions, maintenance, clean-up, storage and waste disposal please consult the product data sheet It is recommended that the reservoir be cleaned with Chesterton's 814 Sump Cleaner and Conditioner



### 388

### **SYNTHETIC TAPPING FLUID**





### PRODUCT CHARACTERISTICS

Ready to use
Fluid, penetrates tight tolerances
Metal fines do not stick
Can be used with aluminum,
and aluminum alloys
Does not smoke, fume or mist
Essentially odorless
Biodegradable, contains no oil or solvents
Excellent lubricity
Superior heat dissipation
Extends tool life
Corrosion inhibited
Contains no chlorine, sulfur,
chlorinated hydrocarbons, petroleum oil,
PCB's, nitrites, phenols, or mercurials





CONTAINER SIZE 388	REORDER NUMBER
475 Milliliter	081491
20 Liter	081492
208 Liter	081194

### **APPLICATIONS**

Tapping
Boring
Reaming
Threading
Drilling
Milling
May be used in
mist applications

### NOTE

Please consult the product data sheet for the suggested use metals listing, clean-up, storage and waste disposal information



### SYNTHETIC TAPPING COMPOUND



Provides the industrial performance of conventional petroleum and solvent based fluids with the superior lubrication of a synthetic, heat-dissipating formulation.

### **PRODUCT CHARACTERISTICS**

Ready to use
Clinging, does not throw off
Appearance and feel of petroleum oil
Excellent lubricity
Reduces galling
Extends tool life
Corrosion inhibited
No chlorine,
chlorinated hydrocarbons, or sulfur
Does not smoke, fume, or mist
Essentially odorless

Biodegradable



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CONTAINER SIZE 389	REORDER NUMBER
475 Milliliter	083431

083429

### **APPLICATIONS**

Tapping Boring Reaming Threading Drilling Milling

### NOTE

Please consult the product data sheet for the suggested use metals listing, clean-up, storage and waste disposal information

### 390

### **CUTTING OIL**

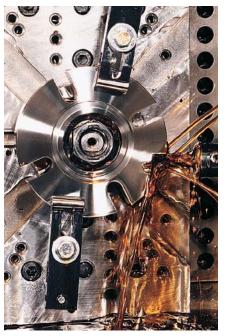


High viscosity, oil-based lubricant reinforced for heavy duty machining applications.

#### PRODUCT CHARACTERISTICS

Use on hard or soft ferrous metals
Powerful extreme pressure additives
Provides maximum tool life
Excellent part finish
Clings to vertical and overhead surfaces
Cleaner cuts, prevents metal to metal
microwelding, galling and built-up edges
Protects from rust
No unpleasant odors
NSF Registered





CONTAINER SIZE 390	REORDER NUMBER
Aerosol	080102

#### **APPLICATIONS**

A lubricant for all types of metal cutting and forming

Broaching Boring Drilling Sawing Reaming Milling Tapping Countersinking

### NOTE

Tools and parts are easily cleaned with water-based degreasers such as Chesterton's 801 Industrial & Marine Solvent or solvent based products such as 274 Industrial Degreaser, please consult product data sheet for additional information



# 395 Walter

### **TAPPING LUBRICANT**

Non-corrosive, non-staining compound, which can be used on all metals including aluminum and aluminum alloys.

### **PRODUCT CHARACTERISTICS**

High viscosity clings to tools
Contains no chlorinated hydrocarbons
Will not corrode aluminum
or other soft metals
Excellent lubricity for softer metals
Improves cutting accuracy
Clear, colorless, non-staining
Pleasant mild odor
Improves machinability,

frees chip movement and reduces drag Stops galling; promotes a uniform cut Prolongs life of cutting tools Increases production rate NSF Registered

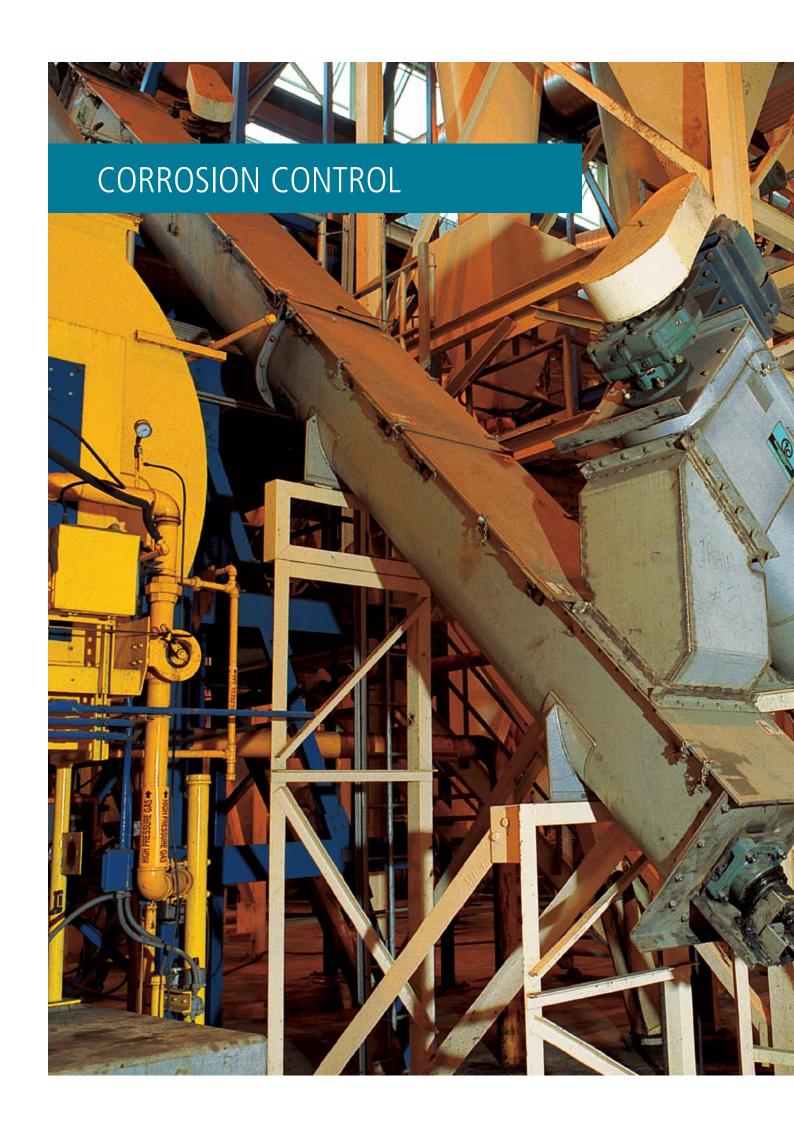




CONTAINER SIZE 395	REORDER NUMBER
Aerosol	085201
20 Liter	085211

### **APPLICATIONS**

Tapping
Threading
Reaming
Boring
Milling
Broaching
Air mist applicators
Acceptable for
a variety of metals
including
aluminium alloys
Excellent for aluminum
mold fabrication
and prototype
machining



### **CLEAR PROTECTIVE COATING (CPC)**

General duty acrylic coating provides a clear, impermeable, flexible film to protect against air, water, oils, chemicals, and corrosion up to 80°C (176°F).

#### PRODUCT CHARACTERISTICS

Transparent
Non-yellowing
High dielectric strength
Oil resistant
Water resistant
Non-staining
Quick-drying
High gloss
Resistant to fungus
Protects copper, aluminum, and brass
from forming dull oxide layer



# Metal machinery Tools Forms Paper signs Documents Drawings Connectors Electrical assemblies Electronic circuit boards Motor windings



CONTAINER SIZE 421	REORDER NUMBER
Aerosol	084901

### 438

### **PTFE COATING**

The best combination of a clean, dry, PTFE-based powder lubricant with a tough, long-term, protective coating that resists water and chemicals.

### **PRODUCT CHARACTERISTICS**

Specially designed for smooth non-porous surfaces
Non-staining
Dries instantly
Non-oily, non-greasy
Excellent chemical resistance
Strong resistance to wash out
Will not absorb or hold moisture
Guards against sticking and material build-up
Reduces lubricant costs
Saves production time
Reduces power consumption
NSF Registered





CONTAINER SIZE 438	REORDER NUMBER
Aerosol	082808

### **APPLICATIONS**

Metals **Plastics** Wood Leather Rubber Glass Painted surfaces **Fiberglass** Elastomers Instruments Machine tools Plastic bearings Cold molds Dies Inside bins, tanks, hoppers Paper converting equipment Woodworking shops

### **CAUTION**

On plastic or paint, test small area before using

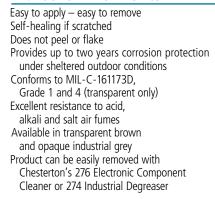


### **HEAVY DUTY RUST GUARD**



Long-term, corrosion preventative coating provides heavy-duty metal protection for all areas constantly exposed to humidity and corrosive fumes, without critical surface preparation.

### **PRODUCT CHARACTERISTICS**







CONTAINI 740 - TRA BROWN	ER SIZE NSPARENT	REORDER NUMBER	
Aerosol		087702	
1 Gallon/3.	8 Liter	087705	
20 Liter		087704	
208 Liter		087707	

### **APPLICATIONS**

Metal tools

### Parts in process

Machinery, tubing, castings, rods, jigs and fixtures Stampings Parts in storage Pumps Fittings Valves Hinges Tanks Indoor structural steel

### **752**

### **COLD GALVANIZING COMPOUND**

One part system zinc rich primer or protective topcoat for iron, steel, and welds exposed to atmospheric or corrosive conditions.

### **PRODUCT CHARACTERISTICS**

Flexible, non-chipping, instantly galvanizing 95% pure zinc in dried film Ultra fine particle size Fast drying, no heat required 3-way corrosion protection Conforms to MIL-P-46105, MIL-P-21035 and MIL-P-26915





CONTAINER SIZE 752	REORDER NUMBER
Aerosol	082601
2,7 Kilogram	082603

#### **APPLICATIONS**

Steel and iron
surfaces/structures
Air conditioning units
Agricultural machinery
Automotive bodies
Fences
Marine equipment
Metal roofs
Mining equipment
Structural steel tanks
Transmission towers
Underground pipelines
Welds
Ducts
Decks



### **RUST TRANSFORMER**®



A mild, natural, acid based product, electrochemically transforms rust into a corrosion-inhibiting surface.

An excellent surface preparation alternative to sand blasting.

### **PRODUCT CHARACTERISTICS**

Works only when in contact with rust; forms protective film
Easy to apply
No sandblasting
Cleans up with water
No strong acids
No elaborate application equipment
Biodegradable



CONTAINER SIZE 763	REORDER NUMBER
1 Gallon/3.8 Liter	089417
20 Liter	089418
208 Liter	089419

### **APPLICATIONS**

Storage tanks
Auto or truck bodies
Heavy equipment
Bridges
Transmission line towers
Ships
Piers
Structural steel
Marine
Construction sites

### NOTE

Provides a good surface for application of Chesterton's 740 Heavy Duty Rust Guard

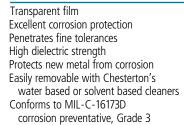


### **MOISTURE SHIELD**



Efficient, clear, moisture displacing and anti-corrosion protective film protects metal parts and equipment for months.

### **PRODUCT CHARACTERISTICS**







CONTAINER SIZE 775	REORDER NUMBER
Aerosol	082102
20 Liter	082110
208 Liter	082107
	Aerosol 20 Liter

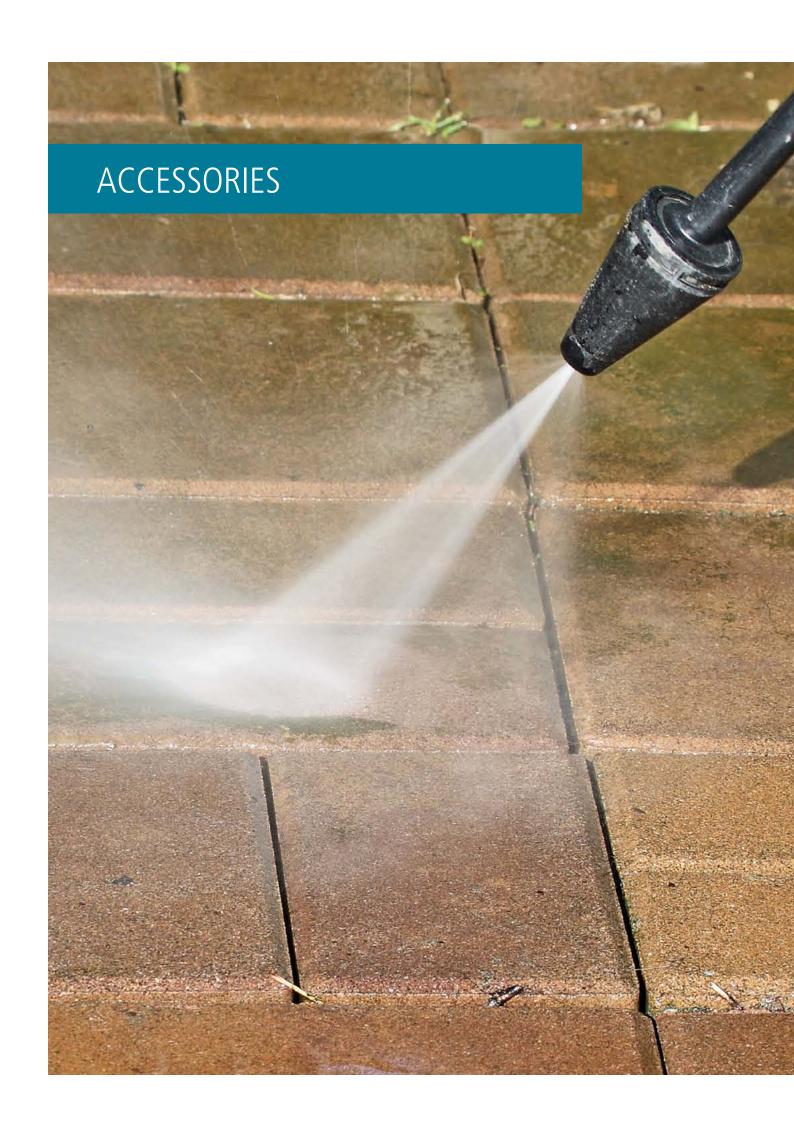
Parts in process Parts in transit Parts in storage Electrical systems Marine industry Dries out wet electrical parts

**APPLICATIONS** 

### NOTE

Where long term protection is desired use Chesterton's 740 Heavy Duty Rust Guard





### **ACCESSORIES**



### **NOVOSPRAYER II**

The Chesterton Novosprayer II is a 475 milliliter (16 oz.), heavy duty, refillable, aluminum container designed to offer the convenience of an aerosol.

The Novosprayer II is easily pressurized with compressed air found in most industrial facilities. For filling ease, Chesterton also offers a filling/measuring device to eliminate the guess work when filling units from bulk containers. Please consult the product data sheet for product compatibility and additional information.

NOVOSPRAYER II	REORDER NUMBER
Container	083086
Filler/Measurer	709442
Repair Kits	709443



### **ECONO-SPRAYER**

A heavy duty refillable spray applicator for lubricants, solvents, cleaning compounds, coatings. The 0,95 liter (1quart) sprayer is fully portable and uses your compressed air to pressurize the container. All-metal construction means the Econo-sprayer is built to last. The Econo-sprayer comes with both jet stream and mist spray nozzles.

ECONO-SPRAYER	REORDER NUMBER
Chrome	080016



#### **470 HAND HELD PROPORTIONER FOAM SPRAYER**

Dilutes liquid chemical concentrates while spraying, creating a thick clinging foam. The unit, constructed of chemically resistant materials, is designed for general spray cleaning with water based cleaners; works strictly on water power. Eleven color coded pre-sized metering tips are provided for dilution ratios from 21:1 to 256:1. The unit has a quick disconnect water hose fitting and trigger operated pistol grip control handle. A minimum water pressure of 1,4 kg/cm² (20 psi) is required to operate equipment. Constructed of chemically resistant materials for durability and long life.

470 HAND HELD PROPORTIONER	REORDER NUMBER
470	080048

### **ACCESSORIES**



### **208 DRUM MOUNTED LIQUID PROPORTIONER**

Automatically dilutes liquid chemical concentrates with water to a pre-set concentration. Unit mounts directly on 110 or 208 liter (30 or 55 gallon) drums and discharges the diluted product directly into any container. Flow rate is 9,5 liters (2.5 gallons) per minute at 3,0 kg/cm<sup>2</sup> (40 psi). Maximum dilution range at 3,0 kg/cm<sup>2</sup> (40 psi) is 110:1, minimum is 1:1. No electricity needed to operate. A minimum water pressure of 1,4 kg/cm<sup>2</sup> (20 psi) is needed to operate the equipment. Economically and safely produces product at the desired dilution, eliminating the possibility of using too much chemical concentrate.

208 DRUM Mounted Liquid Proportioner	REORDER NUMBER
208	084923

### **216 DRUM MOUNTED LIQUID PROPORTIONER**

Has the same great features as the 208 drum with the option of either drum or wall mounting. Flow rates are increased to 37,1 liters (9.8 gallons) per minute at 3,0 kg/cm² (40 psi). Maximum dilution range at 3,0 kg/cm² (40 psi) is 1024:1, minimum is 5:1.

216 DRUM MOUNTED LIQUID PROPORTIONER	REORDER NUMBER
216	080049



### **340 SPRAY WAND WITH LIQUID PROPORTIONER**

Dilutes concentrated liquids while in use. Eight color coded pre-sized metering tips are provided for dilution ratios from 6:1 to 75:1. No electricity is required to operate. Water provides the energy to make the unit perform. Spray wand allows operator to reach inaccessible areas, to spray around corners and under and behind equipment, and to spray areas beyond their normal reach. The three way valve allows operator to control unit at the wand by choosing to spray, rinse,

or shut the unit off. Units are constructed of plastic and chemical resistant metal for long life. A minimum of 1,4 kg/cm<sup>2</sup> (20 psi) water pressure is needed to operate equipment.

340 SPRAY WAND WITH LIQUID PROPORTIONER	REORDER NUMBER
340	080046



### DRUM FAUCETS 1,9 cm (3/4") and 5,1 cm (2")

Fits all standard 1,9 cm (3/4") and 5,1 cm (2") openings. Non-corroding polyethelene construction can handle thin or viscous fluids. Instant on/off control. No gaskets or inside threads to leak. No wrench necessary to install.

DRUM FAUCET	REORDER NUMBER
1,9 cm (3/4")	080019
5,1 cm (2")	080023

### **ACCESSORIES**



### **DRUM PUMP**

Dispenses liquids from Chesterton 110 and 208 liter (30 to 55 gallon) drums. Easily installed in the standard 5,1 cm (2") drum opening. Self-venting. The spigot orientation of 360° permits versatility in dispensing. Effortless operation by unique lever-action stroke. Delivers approximately 0,48 liters (10 ounces) per stroke, with the capability of 22,7 liters (6 gallons) per minute. Will handle the more viscous materials (equivalent of SAE #250 oil). Made of high quality non-corroding polypropylene.

**NOTE:** For dispensing of solvents use the metal drum pump.

DRUM PUMP	REORDER NUMBER
Polypropylene	080018
Stainless steel	709278



### **LUBRI-CUP**™

An automatic, demand free, dispensing device designed to be used with Chesterton's high performance greases. The refillable unit prevents both over and under filling of bearing housings and saves labor downtime for re-lubricating and replacing costly bearings.

#### Construction:

Transparent polycarbonate

### Reservoir capacity:

56,7 g (2 oz)

### Dimensions:

Diameter 60,3 mm (2-3/8 in) Height 117,5 mm (4-5/8 in)

Tomo	aratura	limita
remp	erature	IIIIIII

-23°C (-10°F) to 121°C (250°F)

### **Connections:**

1/8 NPT or 1/8 BSP

LUBRI-CUP	REORDER NUMBER
NPT Thread	086047
BSP Thread	083021



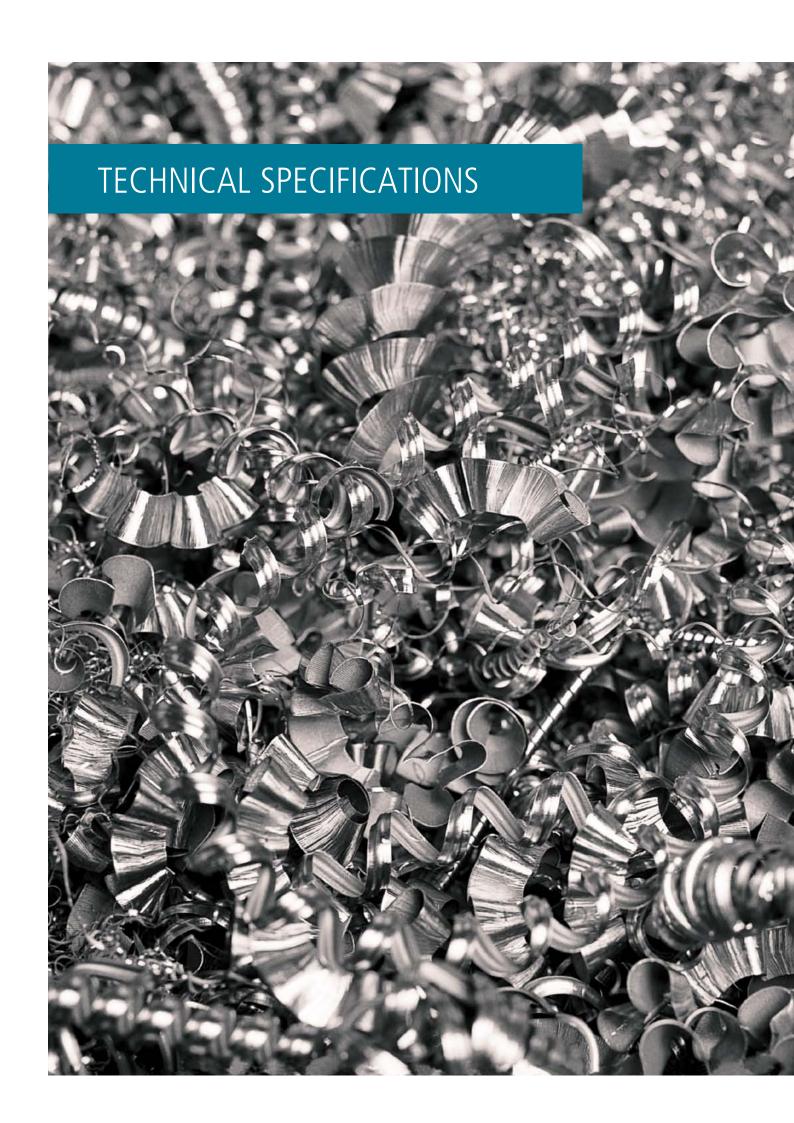
### **LUBRI-CUP™ DISPENSERS**

A range of automatic single-point and multi point lubricators that dispenses Chesterton grease and oil to critical areas, eliminating over- and underlubrication.

These user friendly units have a compact, convenient and sturdy design that is simple to operate and maintain. When used with Chesterton lubricants they offer extended equipment life and reliability even under the harshest conditions of load, temperature and corrosion.

Lubri-Cup™ I	DISPENSERS
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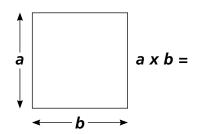
Contact Customer Service



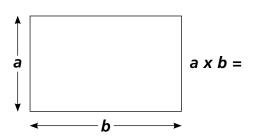
### **CALCULATING SQUARE FOOTAGE**

### **TO CALCULATE**

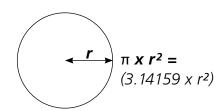
The Area of a Square



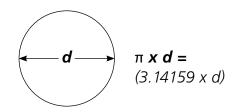
The Area of a Rectangle



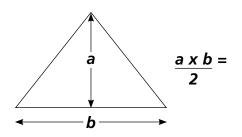
The Area of a Circle



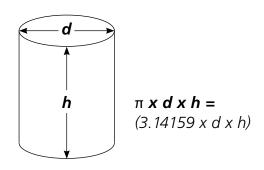
The Circumference of a Circle



The Area of a Triangle



The Area of a Cylinder



### **UNITS OF MEASURE**

GEOMETRIC FIGURES
Circle, area of = $D^2 \times 0.7854 = \pi^2$
r = radius
Circle, circumference of $= \pi D$ or $2\pi r$
Sphere, area of $= \pi D^2$
Sphere, area of = $4\pi r^2$
D = diameter
Sphere, volume of = $D^3 \times 0.5236$
Sphere, volume of = $4/3\pi r^3$
Triangle, area of $= 1/2$ altitude x base
Cone, volume of = area of base x $1/3$ altitude
Trapezoid, area of = 1/2 (sum of parallel sides) x altitude

Pyramid, volume of = area of base x 1/3 altitude

MISCELLANEOUS CONSTANTS
$\pi = 3.14159$
e = 2.71828
$Log_e X = 2.30259 log_{10} X$
Electronic charge = $4.5 \times 10^{-10}$ e.s.u.
Electronic charge = $1.60 \times 10^{-20}$ e.m.u.
Mass units = $1.07 \times 10^{-3} \times MeV$
Mass units = $6.71 \times 10^2 \times ergs$
Speed of light = $3 \times 10^8$ meter/sec.
Speed of sound (in air at sea level) = 1100 ft./sec.

### **UNITS OF MEASURE**

### **MARINERS MEASURE**

6 feet = 1 fathom

120 fathoms = 1 cable length (U.S.N.)

8.439 cable lengths = 1 nautical mile

6076.12 feet = 1 nautical mile

1 nautical mile = 1.15 statute mile (international)

### **METRIC SYSTEM CONVERSION**

Inches x.0254 = Meters

Feet x.305 = Meters

Yards x.914 = Meters

 $Miles \times 1609 = Meters$ 

Miles x 1.609 = Kilometers

Millimeters x .03937 = Inches

Centimeters x.3937 = Inches

Meters x 39.37 = Inches

Meters x 3.281 = Feet

Meters x 1.094 = Yards

Kilometers x .621 = Miles

Square Centimeters x . 155 = Sq. Inches

Square Meters x 10.764 = Sq. Feet

Square Meters x 1.186 = Sq. Yards

Cubic Centimeters x .061 = Cubic Inches

Cubic Inches x 16.2 = Cubic Centimeters

Liters x.2642 = Gallons

Gallons x 3.78 = Liters

Cubic Meters x 1.308 = Cubic Yards

Cubic Yards x .765 = Cubic Meters

### **METRIC SYSTEM PREFIXES**

Mega = 1,000,000

Kilo = 1.000

Hecto = 100Deka = 10

Deci = 0.1

Centi = 0.01

Milli = 0.001

Micro = 0.000001

Tera  $(T) = 10^{12}$ 

Giga (G) =  $10^9$ 

Nano (N) =  $10^{-9}$ 

Pico (P) =  $10^{-12}$ 

### **LENGTH**

1 centimeter = 0.3937 inch

1 centimeter = 0.0328 foot

1 meter = 39.37 inches

1 meter = 1.0936 yards

1 kilometer = 0.62137 mile

1 kilometer = 3280 feet

1 inch = 2.54 centimeters

1 foot = 0.3048 meter

1 mil = 0.001 inch

#### **SQUARE MEASURE**

1 sq. centimeter = 0.1550 sq. in.

1 sq. meter = 1.196 sq. yd.

1 sq. meter = 10.764 sq. ft.

1 sq. kilometer = 0.386 sq. mile

1 sq. inch = 6.452 sq. centimeters

1 sq. foot = 929.03 sq. centimeters

1 sq. foot = 0.092903 sq. meter

1 sq. yard = 0.8361 sq. meter

1 sq. mile = 2.59 sq. kilometers

1 circular mil = 0.7854 sq. mils

1 sq. inch = 1,000,000 sq. mils

#### **CUBIC MEASURE**

1 cubic centimeter = 0.061 cubic inches

1 cubic inch = 16.39 cubic centimeters

1 cubic meter = 1.308 cubic yards

1 cubic meter = 35.316 cubic feet

1 gallon (U.S.) = 231 cubic iches

1 cubic foot = 7.48 gallons

1 liter = 1,000 cubic centimeters

#### TIME

1 day = 86,400 seconds

1 year = 8,760 hours (approximately)

### **VELOCITY**

1 ft./sec. = 0.3048 meter/sec.

1 meter/sec. = 3.281 ft./sec.

1 ft./min. = 0.00508 meter/sec.

1 meter/sec. = 196.9 ft./min.

1 mile/hr. = 0.4470 meter/sec.

1 meter/sec. = 2.237 mile/hr.

1 kilometer/hr. = 0.2778 meter/sec.

1 meter/sec. = 3.60 kilometer/hr.

### **ACCELERATION**

 $\frac{1}{1}$  ft./sec./sec. = 0.3048 meter/sec./sec.

1 mile/hr./sec. = 0.4470 meter/sec./sec.

1 kilometer/hr./sec. = 0.2778 meter/sec./sec.

Standard gravitation = 9.806 meter/sec./sec.

Standard gravitation = 980.6 centimeter/sec./sec.

Standard gravitation = 32.2 ft./sec.sec.

1 slug = 32.2 pounds mass

1 slug = 14.606 kilograms

1 pound mass = 453.6 grams

### **FORCE**

1 pound force = 1 slug x 1 ft./sec./sec.

1 dyne = 1 gram x 1 centimeter/sec./sec.

1 newton = 1 kilogram x 1 meter/sec./sec.

1 pound force = 4.452 newtons

1 newton = 100,000 dynes

1 newton = 0.224 pound force

1 gram force = 980.6 dynes

### **PRESSURE**

1 atmosphere = 14.69 pounds/sq. inch

1 atmosphere = 29.92 inches of Hg

1 atmosphere = 76 centimeters of Hg

1 atmosphere = 33.9 feet of water

1 inch of Hg = 0.491 pounds/sq. inch

Water pressure pounds/sq. inch =

head in feet x 0.434

Hg (Mercury)

### **TORQUE**

Torque is the product of force and perpendicular distance

1 lb./ft. = 1.356 newton/meter

1 lb./ft. = 1.356 joule/radian

1 lb./ft. =  $1.356 \times 10^7$  dynes/centimeter

1 lb./ft. =  $1.383 \times 10^4$  grams/centimeter

1 lb./ft. = 192 ounce/inches

### **WORK AND ENERGY -**MECHANICAL

1 erg = 1 dyne x 1 centimeter

1 joule = 1 newton x 1 meter

1 joule =  $10^5$  dynes x  $10^2$  centimeters

1 joule =  $10^7$  ergs

 $\frac{1}{1}$  ft./lb. = 1 pound force x 1 foot

1 ft./lb. = 1.356 joules

### WORK AND ENERGY -**HEAT EQUIVALENT**

1 Btu raises 1 pound of water 1°F

1 gram calorie raises 1 gram of water 1°C

1 Btu = 252 gram calories

1 Btu = 778.3 ft./lb.

1 Btu = 1054.8 joules

1 gram calorie = 0.003964 Btu

1 gram calorie = 4.184 joules

1 horsepower hour = 2545 Btu

### **WORK AND ENERGY – ELECTRICAL EQUIVALENT**

1 joule = 1 watt x 1 second

1 joule = 1 amp (DC) x 1 volt (DC) x 1 sec.

W (joules) = 1/2 L (henries) x 1 (amperes)<sup>2</sup>

W (joules) = 1/2 C (farads) x E (volts)<sup>2</sup>

1 kilowatt hour = 3,600,000

### **POWER**

1 watt = 1 joule/sec.

1 horsepower = 550 ft.lb./sec. 1 horsepower = 746 watts

1 watt = 3.413 Btu/hr. 1 watt = 0.239 gram calorie/sec.

P watts = R (ohms) x 1 (amperes)<sup>2</sup>

 $P \text{ watts} = E \text{ (volts)}^2$ 

R (ohms)

### **ANGLES**

1 circle =  $2\pi$  radians

1 circle = 360 degrees

1 radian = 57.3 degrees1 degree = 0.01745 radians

### **COMMON FRACTIONS REDUCED TO DECIMALS**

8ths	16ths	32nds	64ths	·	8ths	16ths	32nds	64ths		8ths	16ths	32nds	64ths	
_	_	_	1	.015625	_	_	_	23	.359375	_	_	_	45	.703125
_	_	1	2	.03125	3	6	12	24	.375	_	_	23	46	.71875
_	_	_	3	.046875	_	_	_	25	.390625	_	_	_	47	.734375
_	1	2	4	.0625	_	_	13	26	.40625	6	12	24	48	.75
_	_	_	5	.078125	_	_	_	27	.421875	_	_	_	49	.765625
_	_	3	6	.09375	_	7	14	28	.4375	_	_	25	50	.78125
_	_	_	7	.109375	_	_	_	29	.453125	_	_	_	51	.796875
1	2	4	8	.125	_	_	15	30	.46875	_	13	26	52	.8125
_	_	_	9	.140625	_	_	_	31	.484375	_	_	_	53	.828125
_	-	5	10	.15625	4	8	16	32	.5	_	_	27	54	.84375
_	_	_	11	.171875	_	_	_	33	.515625	_	_	_	55	.859385
_	3	6	12	.1875	_	_	17	34	.53125	7	14	28	56	.875
_	_	_	13	.203125	_	_	_	35	.546875	_	_	_	57	.890625
_	_	7	14	.21875	_	9	18	36	.5625	_	_	29	58	.90625
_	_	_	15	.234375	_	_	_	37	.578125	_	_	_	59	.921875
2	4	8	16	.25	_	_	19	38	.59375	_	15	30	60	.9375
_	_	_	17	.265625	_	_	_	39	.609375	_	_	_	61	.953125
_	_	9	18	.28125	5	10	20	40	.625	_	_	31	62	.96875
_	_	_	19	.296875	_	_	_	41	.640625	_	_	_	63	.934375
_	5	10	20	.3125	_	_	21	42	.65625	8	16	32	64	1
_	_	_	21	.328125	_	_	_	43	.671875					
_	_	11	22	.34375	_	11	22	44	.6875					

### **CONVERSION TABLE**

MULTIPLY	BY	TO OBTAIN		
Atmospheres	33.90	feet of water		
·	29.92	inches of mercury		
	14.69	pounds per sq. inch		
Btu	252	calories (gram) (15°)		
	778.3	foot pounds		
	.0003929	horsepower/hrs.		
	1054.8	joules		
	.0002930	kilowatt/hrs.		
Btu per min.	12.97	foot pounds per sec.		
	.02357	horsepower		
	17.58	watts		
Calories	.003968	Btu		
Erg	9.478 x 10 <sup>-11</sup>	Btu		
	1.0	dyne centimeters		
	7.376 x 10 <sup>-8</sup>	foot pounds		
Feet of water	.02950	atmospheres		
	.8826	inches of mercury		
	.4335	pounds per sq. inch		
Foot pounds per sec.	.07712	Btu per min.		
	.001818	horsepower		
	.001356	kilowatts		
Foot candle	10.765	lux		
Horsepower	42.41	Btu per min.		
	33,000	foot pounds per min.		
	550	foot pounds per sec.		
	.7457	kilowatts		

MULTIPLY	ВҮ	TO OBTAIN
Horsepower/hrs.	2545	Btu
	1.98 x 10 <sup>6</sup>	foot pounds
	2.684 x 10 <sup>6</sup>	joules
Inches of mercury	.03342	atmospheres
	1.133	feet of water
	.4912	pounds per sq. inch
Joules	.0009478	Btu
	.7376	foot pounds
	.0002778	watt hours
	1.0	watt seconds
Kilowatt/hrs.	3413	Btu
	3.6 x 10 <sup>13</sup>	ergs
Lux	.0929	foot candles
Meters	100	centimeters
	39.37	inches
Radians	57.3	degrees
Watts	.05689	Btu per min.
	1.0 x 10 <sup>7</sup>	ergs per sec.
	44.26	foot pounds per min.
	.00134	horsepower

### **TEMPERATURE CONVERSION TABLE**

TEMP. °C		TEMP. °F	TEMP. °C		TEMP. °F	TEMP. °C		TEMP. °F
-17.8	0	32.0	13.9	57	134.6	110	230	446
<del>-17.2</del>	1	33.8	14.4	58	136.4	116	240	464
-16.7	2	35.6	15.0	59	138.2	121	250	482
-16.1	3	37.4	15.6	60	140.0	127	260	500
-15.6	4	39.2	16.1	61	141.8	132	270	518
-15.0	5	41.0	16.7	62	143.6	138	280	536
-14.4	6	42.8	17.2	63	145.4	143	290	554
-13.9	7	44.6	17.8	64	147.2	149	300	572
-13.3	8	46.4	18.3	65	149.9	154	310	590
-12.8	9	48.2	18.9	66	150.8	160	320	608
-12.2	10	50.0	19.4	67	152.6	166	330	626
-11.7	11	51.8	20.0	68	154.4	171	340	644
-11.1	12	53.6	20.6	69	156.2	177	350	662
-10.6	13	55.4	21.1	70	158.0	182	360	680
-10.0	14	57.2	21.7	71	159.8	188	370	698
-9.4	15	59.0	22.2	72	161.6	193	380	716
-8.9	16	60.8	22.8	73	163.4	199	390	734
-8.3	17	62.6	23.3	74	165.2	204	400	752
-7.8	18	64.4	23.9	75	167.0	210	410	770
-7.2	19	66.2	24.4	76	168.8	216	420	788
-6.7	20	68.0	25.0	77	170.6	221	430	806
-6.1	21	69.8	25.6	78	172.4	227	440	824
-5.6	22	71.6	26.1	79	174.2	232	450	842
-5.0	23	73.4	26.7	80	176.0	238	460	860
-4.4	24	75.2	27.2	81	177.8	243	470	878
-3.9	25	77.0	27.8	82	179.6	249	480	896
-3.3	26	78.8	28.3	83	181.4	254	490	914
-2.8	27	80.6	28.9	84	183.2	260	500	932
-2.2	28	82.4	29.4	85	185.0	266	510	950
	29	84.2	30.0	86	186.8	271	520	968
	30	86.0	30.6	87	188.6	277	530	986
-0.6	31	87.8	31.1	88	190.4	282	540	1004
0	32	89.6	31.7	89	192.2	288	550	1022
0.6	33	91.4	32.2	90	194.0	293	560	1040
1.1	34	93.2	32.8	91	195.8	299	570	1058
1.7	35	95.0	33.3	92	197.6	304	580	1076
2.2	36	96.8	33.9	93	199.4	310	590	1094
2.8	37	98.6	34.4	94	201.2	316	600	1112
3.3	38	100.4	35.0	95	203.0	321	610	1130
3.9	39	102.2	35.6	96	204.8	327	620	1148
4.4	40	104.0	36.1	97	206.6	332	630	1166
5.0	41	105.8	36.7	98	208.4	338	640	1184
5.6	42	107.6	37.2	99	210.2	343	650	1202
6.1	43	109.4	37.8	100	212.0	349	660	1220
6.7	44	111.2	43.3	110	230	354	670	1238
7.2	45	113.0	48.9	120	248	360	680	1256
7.8	46	114.8	54.4	130	266	366	690	1274
8.3	47	116.6	60.0	140	284	371	700	1292
8.9	48	118.4	65.6	150	302	377	710	1310
9.4	49	120.2	71.1	160	320	382	720	1328
10.0	50	122.0	76.7	170	338	388	730	1346
10.6	51	123.8	82.2	180	356	393	740	1364
11.1	52	125.6	87.8	190	374	399	750	1382
11.7	53	127.4	93.3	200	392	404	760	1400
12.2	54	129.2	98.9	210	410	410	770	1418
12.8	55	131.0	100	212	413	416	780	1436
13.3	56	132.8	104	220	428	421	790	1454

**NOTE:**THE NUMBERS IN BOLD REFER TO THE TEMPERATURE EITHER IN DEGREES CENTIGRADE OR FAHRENHEIT WHICH IS DESIRED TO CONVERT INTO THE OTHER SCALE.



### **TEMPERATURE CONVERSION TABLE**

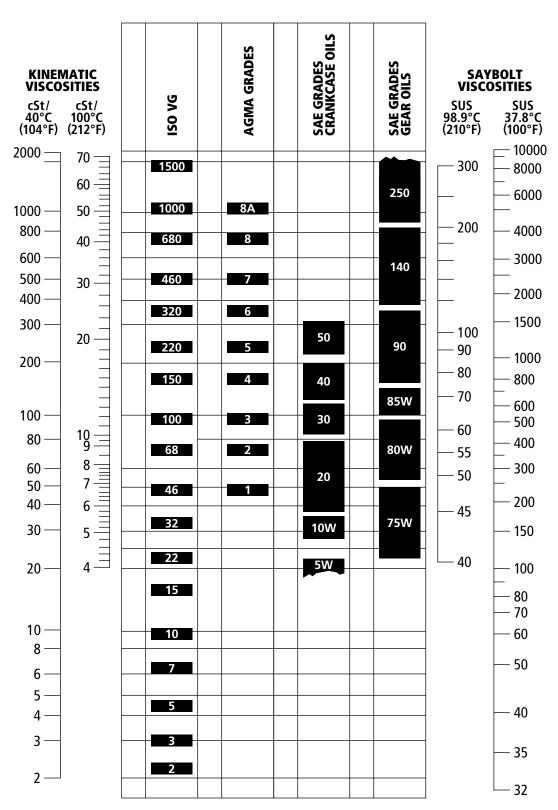
TEMP. °C		TEMP. °F	TEMP. °C		TEMP. °F
427	800	1472	743	1370	2498
432	810	1490	749	1380	2516
438	820	1508	754	1390	2534
443	830	1526	760	1400	2552
449	840	1544	765	1410	2570
454	850	1562	771	1420	2588
460	860	1580	777	1430	2606
466	870	1598	782	1440	2624
471	880	1616	788	1450	2642
477	890	1634	793	1460	2660
482	900	1652	799	1470	2678
488	910	1670	804	1480	2696
493	920	1686	810	1490	2714
499	930	1706	816	1500	2732
504	940	1724	821	1510	2750
510	950	1742	827	1520	2768
516	960	1760	832	1530	2786
521	970	1778	838	1540	2804
527	980	1796	843	1550	2882
532	990	1814	849	1560	2840
538	1000	1832	854	1570	2856
543	1010	1850	860	1580	2876
549	1020	1868	866	1590	2894
554	1030	1886	871	1600	2912
560	1040	1904	877	1610	2930
566	1050	1922	882	1620	2948
571	1060	1940	888	1630	2966
577	1070	1958	893	1640	2984
582	1080	1976	899	1650	3002
588	1090	1994	904	1660	3020
593	1100	2012	910	1670	3038
599	1110	2030	916	1680	3056
604	1120	2048	921	1690	3074
610	1130	2066	927	1700	3092
616	1140	2084	932	1710	3110
621	1150	2102	938	1710	3128
627	1160	2120	943	1720	3146
632	1170	2138	949	1730	3164
638	1180	2156	954	1750	3182
643	1190	2174	960	1760	3200
649	1200	2174	966	1770	3218
654	1210	2210	971	1770	3216
660	1210	2210	971	1780	3250
666	1230	2246	982	1800	3272
671	1240		988	1810	3272
		2264			
677	1250	2282	993	1820	3308
682 688	1260	2300	999	1830	3326
	1270	2318	1004	1840	3344
692	1280	2336	1010	1850	3362
699	1290	2354	1016	1860	3380
704	1300	2372	1021	1870	3398
710	1310	2390	1027	1880	3416
716	1320	2408	1032	1890	3434
721	1330	2426	1038	1900	3452
727	1340	2444	1043	1910	3470
732	1350	2462	1049	1920	3488
738	1360	2480	1054	1930	3506

TEMP. °C		TEMP. °F
1060	1940	3524
1066	1950	3542
1071	1960	3560
1077	1970	3578
1062	1980	3596
1088	1990	3614
1093	2000	3632

**NOTE:**THE NUMBERS IN BOLD REFER TO THE TEMPERATURE EITHER IN DEGREES CENTIGRADE OR FAHRENHEIT WHICH IS DESIRED TO CONVERT INTO THE OTHER SCALE.



### **VISCOSITY EQUIVALENTS**



- Viscosities can be related horizontally.
- Viscosities based on 95 VI single grade oils.
- ISO are specified at 40°C (104°F).
- AGMA are specified at 37.8°C (100°F).
- SAE 75W, 80W, 85W, 5W and 10W specified at low temperatures. Equivalent Viscosities for 100°C and 212°F are shown.
- SAE 90 and 250 and 20 to 50 specified at 98.9°C (210°F).



### **KINEMATIC VISCOSITY/ISO SYSTEM**

ISO GRADE		COSITY RANGE t @ 38°C (100°F)
2	1.98	2.42
3	2.88	3.52
5	4.14	5.06
7	6.12	7.48
10	9.00	11.00
15	13.50	16.50
22	19.80	24.20
32	28.80	35.20
46	41.40	50.60
68	61.20	74.80
100	90.00	110.00
150	135.00	165.00
220	198.00	242.00
320	288.00	352.00
460	414.00	506.00
680	612.00	748.00
1000	900.00	1100.00
1500	1350.00	1650.00

### **HANDY GUIDE TO TAP DRILL SIZES**

THREAD	TAP DRILL	THREAD	TAP DRILL
#6 – 32	No. 36	5/8 – 11	17/32
#6 – 40	No. 33	5/8 – 18	37/64
#8 – 32	No. 29	3/4 - 10	21/32
#8 – 36	No. 29	3/4 – 16	11/16
#10 – 24	No. 25	7/8 – 9	49/64
#10 – 32	No. 21	7/8 – 14	13/16
#12 – 24	No. 16	1 – 8	7/8
#12 – 28	No. 14	1 – 12	59/64
1/4 – 20	No. 7	1 – 14	15/16
1/4 – 28	No. 3		
5/16 – 18	F		
5/16 – 24			
3/8 – 16	5/16		
3/8 – 24	Q		
7/16 – 14	U		
7/16 – 20	25/64		
1/2 – 13	27/64		
1/2 – 20	29/64		
9/16 – 12	31/64		
9/16 – 18	33/64		
B 1 250/ f II.1 1			

Based on approximate 75% full thread

### **MATERIAL SELECTION CHART FOR CLEANERS**

MATERIAL	CLEANER	PROCESS
Aluminum	Low alkaline*	Any, but caution should be exercised when ultrasonics are used because surface etching may occur
Copper	Moderate alkaline	Same as aluminum
Ferrous metals	Moderate alkaline	Any
Glass	Moderate alkaline Any, but caution show with ultrasonics	
Magnesium	Solvents only	Any
Mild steel	Moderate alkaline pH below 10 preferred	Any
Cold rolled steel	Moderate alkaline	Any
Painted surfaces	Low alkaline*	Any, but ultrasonics could affect adhesion
Plastics	Low alkaline	Any
Precious gems	Low alkaline caustic and solvent free	Ultrasonics preferred
304 stainless steel	High alkaline	Any
316 stainless steel	High alkaline	Any

<sup>\*</sup>Should check for compatibility before using

### THE MECHANICS OF CLEANING

Listed below are some of the most commonly used terms in aqueous cleaning. An effective cleaner can utilize some or all of the following types of chemical reaction methods.

### Wetting

Surface Acting Agents commonly referred to as surfactants allow the cleaner to penetrate and loosen soils from the substrate by lowering the surface tension.

### **Emulsification**

After the surfactants have lowered the surface tension, the emulsifiers allow two mutually immiscible fluids like oil and water to be temporarily dispersed. The oil droplets get a thin coating of surfactant that prevent them from reforming and floating to the surface. Emulsions are usually temporary to allow the oil and water to split for easy disposal.

### **Saponification**

The reaction between a natural organic oil (like animal fat or vegetable oil) that contains reactive fatty acids with free alkalies to form soaps. This is a permanent reaction.

#### **Deflocculation**

The process of breaking up large clumps of soil into fine particles and dispersing them throughout the cleaning solution. A good deflocculant will keep the soils dispersed thus preventing them from recombining or agglomerating.

### Sequestration

Prevents the formulation of soap scum and salt deposits by undesirable ions like calcium magnesium, and heavy metals by deactivating them.

### WHAT MAKES UP AN EFFECTIVE WATER BASED CLEANER?

Following are some of the key ingredients that make up effective water based cleaners, brief explanations of their functions and some examples.

### **Surface Active Agents (Surfactants)**

Basic component of water based cleaners

Lowers surface tension of water

Emulsifier, dispersant, soil suspender

Many different chemical families are considered surfactants including: sulfonates, esters, and nonyl phenols.

Can be naturally occurring or synthetic

Different ionic charges: anionic, cationic, or nonionic

#### **Builders**

Alkaline substances

Enhance performance of surfactants

Buffer water

Improve soil suspension

Some examples are: trisodium phosphate, potassium phosphate, sodium silicate and sodium carbonate

### **Grease Cutters**

Water soluble organic solvents

Some examples are: alcohol, glycol ethers, like butyl cellosolve or emulsifiable solvents like terpenes or mineral spirits

#### Alkali

Generally sodium hydroxide (NaOH) or potassium hydroxide (KOH)

Saponifies animal and vegetable oils

Neutralizes acids

**Buffers** water

Raises pH of cleaner (high alkaline)

Consumed in chemical reaction

### **Chelates**

Softens water

Example:

Ethylene diamine tetraacetate (EDTA)

In addition to the previous components, most aqueous cleaners need external help to be truly effective.

#### Work

Needed in many cases

Examples

Scrubbing, agitation, pressure, cavitation

### Heat

Accelerates chemical reactions

Reduces viscosity



### **METHOD OF LUBRICATION**

	METHOD O	LODINICATIO		
SHAFT DIAMETER	OPERATING TEM	PERATURES	LUBRICANT RECOM	IMENDED
Up to 2.54 cm (1")	°C	°F	Oil Viscosity Sec. @ (100°F)	Greases NLGI Consistency Number
Up to 1000 rpm	Below 0°	Below 32°	150 to 185	0 to 1
	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 1000	2
	93.3	Over 200	1500 to 2500	2 to 3
000 to 3000 rpm	Below 0°	Below 32°	150 to 185	0 to 1
	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 600	2
	93.3	Over 200	700 to 1000	2
3000 to 10,000 rpm	Below 0°	Below 32°	90 to 120	0 to 1
7000 to 10,000 ipin	0 to 37.8	32 to 100	150 to 185	0 to 1
	37.8 to 93.3	100 to 200	250 to 350	1
	93.3	Over 200	500 to 1000	2
Over 10,000 rpm	Below 0°	Below 32°	33 to 85	0 to 1
over 10,000 rpm	0 to 37.8	32 to 100	55 to 110	
	37.8 to 93.3	100 to 200		0 to 1
		Over 200	75 to 250	1
	93.3	over 200	350 to 550	2
SHAFT DIAMETER	OPERATING TEMP		LUBRICANT RECOM	
2.54 cm to 5.08 cm (1" to 2")	°C	°F	Oil Viscosity Sec. @ (100°F)	Greases NLGI Consistency Number
Jp to 500 rpm	Below 0°	Below 32°	150 to 185	0 to 1
· p	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 1000	2
	93.3	Over 200	1500 to 2500	2 to 3
500 to 1500 rpm	Below 0°	Below 32°	150 to 185	0 to 1
100 to 1500 ipili	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 600	2
	93.3	Over 200	700 to 1000	2
1500 to 5000 rpm	Below 0°	Below 32°	90 to 120	0 to 1
1300 to 3000 Ipili		32 to 100		
	0 to 37.8	100 to 200	150 to 185 250 to 350	0 to 1
	37.8 to 93.3 93.3			<u> </u>
		Over 200	500 to 1000	2
Over 5000 rpm	Below 0°	Below 32°	33 to 85	0 to 1
	0 to 37.8	32 to 100	50 to 110	0 to 1
	37.8 to 93.3	100 to 200	75 to 250	1
	93.3	Over 200	350 to 550	2
SHAFT DIAMETER	OPERATING TEM		LUBRICANT RECOM	
5.08 cm to 7.62 cm (2" to 3")	°C	°F	Oil Viscosity Sec. @ (100°F)	Greases NLGI Consistency Number
Jp to 300 rpm	Below 0°	Below 32°	150 to 185	0 to 1
	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 1000	2
	93.3	Over 200	1500 to 2500	2 to 3
300 to 1000 rpm	Below 0°	Below 32°	150 to 185	0 to 1
	0 to 37.8	32 to 100	250 to 350	1
	37.8 to 93.3	100 to 200	400 to 600	2
	93.3	Over 200	700 to 1000	2
000 to 3000 rpm	Below 0°	Below 32°	90 to 120	0 to 1
ooo to sooo ipiii				
	0 to 37.8	32 to 100	150 to 185	0 to 1
	37.8 to 93.3	100 to 200	250 to 350	1
2000	93.3	Over 200	500 to 1000	2
Over 3000 rpm	Below 0°	Below 32°	33 to 85	0 to 1
	0 to 37.8	32 to 100	50 to 110	0 to 1
	37.8 to 93.3	100 to 200	75 to 250	1
	93.3	Over 200	350 to 550	2



### **METHOD OF LUBRICATION**

	IVIETHOD OF LODNICATION							
SHAFT DIAMETER	OPERATING TEMP	PERATURES	LUBRICANT RECOMMENDED					
7.62 cm to 10.16 cm (3" to 4")	°C	°F	Oil Viscosity Sec. @ (100°F)	Greases NLGI Consistency Number				
Up to 200 rpm	Below 0°	Below 32°	150 to 185	0 to 1				
	0 to 37.8	32 to 100	250 to 350	1				
	37.8 to 93.3	100 to 200	400 to 1000	2				
	93.3	Over 200	1500 to 2500	2 to 3				
200 to 750 rpm	Below 0°	Below 32°	150 to 185	0 to 1				
	0 to 37.8	32 to 100	250 to 350	1				
	37.8 to 93.3	100 to 200	400 to 600	2				
	93.3	Over 200	700 to 1000	2				
750 to 2000 rpm	Below 0°	Below 32°	90 to 120	0 to 1				
•	0 to 37.8	32 to 100	150 to 185	0 to 1				
	37.8 to 93.3	100 to 200	250 to 350	1				
	93.3	Over 200	500 to 1000	2				
Over 2000 rpm	Below 0°	Below 32°	33 to 85	0 to 1				
•	0 to 37.8	32 to 100	50 to 110	0 to 1				
	37.8 to 93.3	100 to 200	75 to 250	1				
	93.3	Over 200	350 to 550	2				
SHAFT DIAMETER	OPERATING TEMP	PERATURES	LUBRICANT RECOM	IMENDED				
Over 10.16 cm (4")	°C	°F	Oil Viscosity Sec. @ (100°F)	Greases NLGI Consistency Number				
Jp to 100 rpm	Below 0°	Below 32°	150 to 185	0 to 1				
	0 to 37.8	32 to 100	250 to 350	1				
	37.8 to 93.3	100 to 200	400 to 1000	2				
	93.3	Over 200	1500 to 2500	2 to 3				
00 to 500 rpm	Below 0°	Below 32°	150 to 185	0 to 1				
	0 to 37.8	32 to 100	250 to 350	1				
	37.8 to 93.3	100 to 200	400 to 600	2				
	93.3	Over 200	700 to 1000	2				
500 to 1000 rpm	Below 0°	Below 32°	90 to 120	0 to 1				
	0 to 37.8	32 to 100	150 to 185	0 to 1				
	37.8 to 93.3	100 to 200	250 to 350	1				
	93.3	Over 200	500 to 1000	2				
Over 1000 rpm	Below 0°	Below 32°	33 to 85	0 to 1				
•	0 to 37.8	32 to 100	50 to 110	0 to 1				
	37.8 to 93.3	100 to 200	75 to 250	1				
	02.2	Over 200	2E0 +o EE0	າ				

Over 200

350 to 550



93.3

### **NSF CATEGORY CODE LETTERS**

The following code letters designate the permissible use for each authorized compound, and conditions for use are restricted by the category in which it is placed.

**NOTE:** In several categories, reference is made to the need for rinsing with potable water. FIAD accepts water used in federally inspected plants as being potable when such certification is made by state health agency authorities.

### A. Cleaning Compounds

A1 — Compounds for use as general cleaning agents on all surfaces, or for use with steam or mechanical cleaning devices in all departments.

Before using these compounds, food products and packaging materials must be removed from the room or carefully protected.

After using these compounds, surfaces must be thoroughly rinsed with potable water.

- A2 Compounds for use only in soak tanks or with steam or mechanical cleaning devices in all departments.

  Before using these compounds, food products and packaging materials must be removed from the room or carefully protected.

  After using these compounds, all surfaces in the area must be thoroughly rinsed with potable water.
- A3 Acid Cleaners for use in all departments
  Before using these compounds, food products
  and packaging must be removed from the room
  or carefully protected. After using these compounds,
  all surfaces in the area must be thoroughly rinsed
  with potable water.
- A4 Floor and Wall Cleaners for use in all departments.
   Before using these compounds, food products and packaging materials must be removed from the room or carefully protected.
   After using these compounds, all surfaces in the area must be thoroughly rinsed with potable water.

### C. Compounds used in Inedible and Non-processing Areas

C1 – Compounds for use on all surfaces in inedible product processing areas, non-processing areas, and/or exterior areas.

These compounds must not be used to mask odors resulting from unsanitary conditions.

They must be used in a manner that prevents penetration of any characteristic odor or fragrance into edible product areas.

Compounds containing isomers of dichlorobenzene, or other substances toxic by inhalation, may be used only in areas where there is adequate ventilation to prevent accumulation of hazardous vapors.

Permission for use of these compounds on loading docks and other similar areas is left to the discretion of the inspectors in charge of the plants.

### **H.** Lubricants

#### H1 – Lubricants

These compounds may be used as a lubricant or anti-rust film on equipment and machine parts in locations in which there is exposure of the lubricated part to edible products. They may also be used as a release agent on gaskets and seals of tank closures. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping as required to leave the surface effectively free of any substance, which could be transferred to food being processed.

#### H2 - Lubricants

These compounds may be used as a lubricant, release agent, or ant-rust film on equipment and machine parts or in closed systems (e.g., hydraulic systems) in locations in which there is no possibility of the lubricant or lubricated part contacting edible products.

#### K. Solvent Cleaners

- K1 Solvents and Solvent Degreasers for use in non-processing areas.

  Following the use of these compounds, equipment and utensils must be thoroughly washed and rinsed with potable water before being returned to a processing area.
- K2 Solvents for cleaning electronic instruments.

These compounds are chemically acceptable for cleaning electronic instruments and devices that will not tolerate aqueous cleaning solutions. Before using these compounds, food products and packaging materials must be removed from the area or carefully protected. These compounds must be used in a manner so that all odors associated with the compound are dissipated before food products or packaging materials are re-exposed in the area.

### P. Compounds Requiring Letter Indicating Authorized Use

#### P1 - Miscellaneous

Compounds listed in this category are to be used in accordance with the conditions set forth in the letter of acceptance. Copies of the acceptance letter must be supplied to Federal Inspectors as proof of the acceptable use(s) of the compound.



### **SPECIFICATIONS**

PRODUCT SPECIFICATIONS AND QUALIFICATIONS  MILITARY/FEDERAL				
PRODUCT	NSF	FDA	SPECIFICATION	OTHER
218 HDP	A1 133943	_	_	_
235 SSC	A4 133964	_	_	_
273 Electric Motor Cleaner	K2 133975 K2 133976	_	_	Underwriters Lab (UL) (Aerosol Only)
274 Industrial Degreaser	C1, K1, K2 133955 C1, K1, K2 133949 (aerosol)	178.3530	_	_
276 Electronic Component Cleaner	K2 133974 (bulk) K2 133973 (aerosol)	172.882 172.884 178.3530 178.3650		
277 Metal Surface Degreaser	C1, K1 134007 (bulk) C1, K1 134008 (aerosol)	172.882 172.884 178.3530	_	-
279 PCS	K2 134012	_	-	German IGI250121/29
292 Precision Degreasing Solvent	K1, K2, K3 134003 K1, K2, K3 134004 (aerosol)	178.3530 178.3570	-	_
296 Electro Contact Cleaner	K2 134002	_		
294 CSD	C1, K1, K3 143867			
46 Descaler & hemical Cleaner	A3 133962	_	-	_
360 Phosphate-Free Cleaner	A1, A4 133961	_	_	
90 Cutting Oil	H2, P1 134014 H2, P1 134947 (aerosol)	_	_	_
95 Tapping Lubricant	H2 133935	_	-	_
38 PTFE Coating	H2 133950 (aerosol) H2 133951 (bulk)	_	_	_
501 Chain Drive Pin & Bushing Lubricant	H2 133927 (aerosol) H2 133979 (bulk)	_	_	_
510 Synthetic .ubricating Fluid	H2 133972 (aerosol) H2 133971 (bulk)	_	-	_
515 HTG #1	H2 133941	_	_	
15 HTG #2	H2 133940	_	_	_
22 White Grease	H1 133929	178.3570 177.1550	_	
525 CXF	H1 138414	178.3620 178.3570	_	_
529 High Temperature White Grease	H1 133936	178.3570 177.1550	_	_
530 SXCF	H1 138415 (bulk) H1 142462 (aerosol)	178.3570	_	_
536 FG SLF-220	H1 147202	178.3570	_	_
551 Detergent .ubricating Oil	H2 133946 (bulk) H2 133928 (aerosol)	_	_	-
552 Pneumatic Lubricant & Conditioner	H2 133944	_	-	_
560 Silicone Lubricant	H1 133970 (aerosol) H1 133932 (bulk)	181.28 178.3910 178.3570 178.884 178.3650	_	_
662FG Barrier Fluid 22	H1 143837			
590FG Lubricant	H1 133933 (aerosol) H1 133969 (bulk)	178.3620	-	
706 Rustsolvo®	H2 133942	_	_	_
			MIL-A-907	QPL-907



### **SPECIFICATIONS**

PRODUCT	NSF	FDA	MILITARY/FEDERAL SPECIFICATION	OTHER
715 Spraflex® Standard and Gold	H2 133938 H2 133934 (aerosol) H2 133930 (Gold) H2 133931 (Gold aerosol)	-	-	_
723 Sprasolvo® 723FG Sprasolvo®	H2 133939 H1 134006 (FG)	_ 172.884 178.3620 178.3650 178.3570	_	_
725 Nickel Anti-Seize Compound	H2 133959	-	MIL-A-907	-
730 Spragrip®	P1 133947	_	_	_
740 Heavy Duty Rust Guard	_	-	MIL-C-16173D Grade 1 & 4	-
752 Cold Galvanizing Compound	-	_	MIL-P-46105 MIL-P-26915 MIL-P-21035	-
775 Moisture Shield	H2 134015	_	MIL-C-81309D TYPE II MIL-C-16173D TYPE III	-
785 Parting Lubricant (Bulk)	H2 133960	-	DVGW	_
785 FG Parting Lubricant	H1 132237	_	_	-
787 Sliding Paste	H2 133956	_	_	_
800 GoldEnd⊚ Tape	H1, P1 134016	177.1615 177.1550	MIL-T-27730A	Underwriters Lab USA (UL) Canada (ULC) DVGW 96.01e907 EN751-3 OXYGEN CERTIFIED, BAM Ref. No. 11.1/46 513
801 Industrial & Marine Solvent	A1, A4, A8 133965	_	_	_
803 Industrial & Marine Solvent II	A1 133966	_	-	-
820 KPC	A1 133963	-	_	_
820N KPC	A1, A4 133977	_	_	_
860 Moldable Polymer Gasketing	P1 134017 (aerosol) P1 134018 curing	175.300 177.2600	-	-
900 GoldEnd® Paste	H2, P1 133957	_	_	Underwriters Lab (UL)
3500 Valvelon®	P1 134013	_	_	_



### **GLOSSARY OF TERMS**



The American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) are 8-hour Time-Weighted Average (TWA) concentrations which should not be exceeded.

Concentrations are given in parts per million (ppm) or milligrams per cubic meter (mg/m³). The higher the TLV, the safer the substance.

#### API

American Petroleum Institute.

#### **AGMA**

American Gear Manufacturers Association.

### **Aromatic content**

A major group of unsaturated cyclic hydrocarbons containing one or more rings, typified by benzene, which has a 6-carbon ring containing three double bonds. The vast number of compounds of this group, derived chiefly from petroleum and coal tar, are rather highly reactive and chemically versatile. The name is due to the strong and not unpleasant odor characteristics of most substances of this nature. Since most aromatics tend to have high toxicity and many are considered carcinogenic, therefore, low aromatic contents are desirable in solvents.

### **Asperities**

The irregular features in a contact surface.

#### **ASTM**

American Society for Testing and Materials.

### **Axial**

Referring to the length of an object, for example an axial load on a shaft is parallel to the length (axis) of that shaft.

### **Boundary Lubrication**

That condition in which the lubricant film is discontinuous.

### Babbit

An alloy, or mixture of metals that is softer than the metal used in the rotating components. It has a lower coefficient of friction and acts as a sacrificial component in the moving assembly; it will not gall or score the shaft. It is named for its inventor.

### CAS#

Chemical Abstracts Registry Number.

A division of the American Chemical Society that publishes a chemistry journal and assigns numbers to all chemical compounds.

### **Coefficient of Friction**

The coefficient of friction is the ratio of the force required to move an object and the normal force or weight of an object. The coefficient of friction is dependent upon the nature of the material. Some coefficients of friction for various materials are:

Bronze on bronze — 0.20 Tool steel on tool steel — 0.42 Mild steel on mild steel — 0.57 Hard steel on babbit metal — 0.34

#### Cone

The inner part of an antifriction bearing.

### **Elastohydrodynamic Lubrication**

A mode of lubrication which relies on the deformation of the contact surfaces in conjunction with the viscosity of an oil at high speeds to establish a protective film.

#### **EPA 17**

The United States Environmental Protection Agency's voluntary toxics reduction incentive program, the "33/50" program, calls for a voluntary nationwide reduction of toxic waste. The goal is a 33% reduction by 1992 for on-site and off-site releases and a 50% reduction by 1995.

The program asks companies to voluntarily reduce pollution caused by 17 high priority toxic chemicals.

This is a pollution prevention strategy to reduce threats

### The 17 chemicals were chosen on the basis of 3 criteria:

to public health and the environment.

They pose environmental and health concerns. They are high volume industrial chemicals. They can be reduced through pollution prevention.

#### The 17 chemicals are:

Benzene, cadmium & compounds, carbon tetrachloride, chloroform, chromium & compounds, cyanides, lead & compounds, mercury & compounds, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, nickel & compounds, tetrachloroethylene, toluene, trichloroethane, trichloroethylene, xylenes.

### **Flammability rating**

When and where possible, the flammability of a substance was determined and listed.

## The following OSHA criteria (29 CFR 1910.106) were used to classify flammable or combustible liquids:

Class IA flammable liquid FI.P below 73°F (22.8°C) and BP below 100°F (37.8°C)
Class IB flammable liquid FI.P below 73°F (22.8°C) and BP at or above 100°F (37.8°C)
Class IC flammable liquid FI.P at or above 73°F (22.8°C) and below 100°F (37.8°C)
Class II combustible liquid FI.P at or above 100°F (37.8°C) and below 140°F (60°C)
Class IIIA combustible liquid FI.P at or above 140°F (60°C) and below 200°F (93.3°C)
Class IIIB combustible liquid FI.P at or above 200°F (93.3°C)



### **GLOSSARY OF TERMS**



The temperature at which a liquid or volatile solid gives off sufficient vapor to form an ignitable mixture with the air nearest the surface of the liquid or within the test vessel.

All measurements listed on this chart are by closed cup method unless otherwise stated. (TOC is Tag Open Cup)

#### Fretting

A condition of wear characterized by grooving or lines spaced at intervals around a shaft. It can be caused by oscillating motion with small amounts of play (approx. 1 micron) in the assembly. Usually design related.

#### Galling

Destructive wear of a metal surface characterized by large chunks of metal being removed.

### **Hydrodynamic Lubrication**

That condition of lubrication in which a continuous film separates the moving parts.

### Idler

A rotating element neither driving nor driven. It is simply used as a low friction support for a chain or belt.

#### **IDLH**

Immediately Dangerous to Life or Health concentrations (IDLH) represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing (e.g. severe eye irritation) or irreversible health effects.

These values were determined during the Standards Completion Program only for the purpose of respirator selection.

IDLH values that are in brackets denote substances that are considered to be carcinogenic by NIOSH (National Institute for Occupational Safety and Health). It should be noted that carcinogenic effects were not considered in the Standards Completion Program. No listing means that a value was not available due to lack of data.

#### **KB** value

The Kauri Butanol (KB) value is a measure of the solvent power of a hydrocarbon liquid. Kauri gum is readily soluble in butanol but insoluble in hydrocarbons. The KB value is the measure of the volume of solvent required to produce turbidity in a standard solution containing kauri gum dissolved in butanol. The higher the KB value, the more powerful the solvent.

### Kinematic

Refers to viscosity measured by its rate of flow due to its mass.

#### Lubricity

A property of a lubricant to reduce friction beyond that expected by viscosity alone.

#### **Naphthenic**

Composed of compounds of a more cyclic and/or aromatic nature; low ashing.

### **Paraffinic**

Composed of long straight chains of hydrocarbons.

#### **Poise**

A unit of dynamic (sheared between moving surfaces) viscosity measurement.

#### Race

The outer contact surface of a rolling element bearing.

#### Radia

Referring to something perpendicular to a rotating assembly; A radial load is at 90° to the shaft.

### **Rib-roller velocity**

The velocity of the rollers in an antifriction bearing which will help determine the lubrication requirements of a bearing.

#### SΔF

Society of Automotive Engineers.

### **Shock loading**

A condition caused by sudden start-up or stoppage of equipment. Change in loading is rapid and places added stress, on bearing and other parts.

#### Solvent

A substance capable of dissolving another substance (solute) to form a uniformly dispersed mixture (solution) at the molecular or ionic size level.

### **Spalling**

A condition of metal fatigue in which the surface of the metal flakes off.

### Stoke

A unit of measurement for kinematic viscosity in units m<sup>2</sup>/sec.

#### SUS

Saybolt Universal Second; yet another unit for measurement of fluid viscosity.

### Timken

Test method named for bearing manufacturer of the same name.



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