

**LUBRICANTS
AND GREASE
RAW MATERIALS
PRODUCT BROCHURE**



ABOUT TAJ AL MULOOK



Taj Al Mulook was established in 1989 as an industrial chemicals distribution company and today is one of the largest distributors in the Middle East. Taj Al Mulook caters to raw materials of various industries such as Polyurethane Foam, Paint Ink & Coating, Rubber, Plastics, Construction Chemicals, Oil & Gas, Petrochemicals, Water Treatment, Industrial & Specialty Chemicals and Lubricants. Taj Al Mulook is ranked 14th in the MEA (Middle East and Africa) region with 45th rank in Asia and 128th rank worldwide as per ICIS report for Top 100 Chemicals Distributors in 2017.

Lubricants raw material division operates with the foresight of creating essential support system for industrial applications. We have been providing qualitative and cost effective blending solutions by developing tailored products with renowned additive manufacturers as per market requirements. Our additive packages are designed to meet the API (American Petroleum Institute) requirements with the better treat rate and components to boost the performance.

With stocking facilities in UAE (Jebel Ali, Umm Al Quwain and Hamriyah Free Zone, Sharjah) and Saudi Arabia (Riyadh and Jeddah); our aim is to satisfy all customers' requirements, however demanding they may be. In addition, a highly prepared team of Chemical Engineers is fully dedicated to provide technical assistance in product formulations, parameters and blending processes. The technical team also develops formulation, especially for export as per the requirements of the customers.

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PAMA BASED PRODUCTS



VISCOSITY INDEX IMPROVERS



KUSACRYL V25

KUSACRYL236

VI IMPROVER FOR HYDRAULIC FLUIDS

KUSACRYL – V25 is an alkyl methacrylate type polymer, specially designed for uses as Viscosity Index Improver, in formulation of High Viscosity Index Hydraulic Fluids, GearOils. Due to the very good shear stable Index in Bosch injector pump and good Pour Point properties it is specially recommended for shear stable hydraulic oils which are used in the wide range of temperatures.

Its excellent shear stability good cold properties and low Brookfield Viscosities make KUSACRYL – V25 suitable for formulating multi grade gear and engine oils. KUSACRYL – V25 has been optimized to impart properties like pour point, demulsibility and hydraulic stability.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	900-1500 CST
4.	DENSITY@15C (ASTM D4052)	0.92 Typical (0.90-0.94 range)
5.	FLASH POINT (COC) C (ASTM D3278)	150 min
6.	SSI 30/250 cycles (DIN 51382)(ASTM 6278)	5/12

Recommended dosage is 1-10 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for at least 1 yrs if stored and handled properly.

NOTE: The information presented here is based on our present state of knowledge. All recommendation regarding the use of our products are in an advisory capacity, buyer and users should make their assessment of our products under their own conditions and for their own requirements. Hence, this should not therefore be constructed as guaranteeing specific properties of the products.

VI IMPROVER FOR MULTIGRADE ENGINE OILS

KUSACRYL – 236 is an alkyl methacrylate type polymer, specially designed for uses as Viscosity Index Improver, in formulation of High Viscosity Oils, Multigrade oils. It has good compatibility with a wide range of base stocks and other performance additives normally used in multigrade engine oils.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	1500-2500 CST
4.	DENSITY@25C (ASTM D4052)	0.91 Typical(0.88-0.93 range)
5.	FLASH POINT(COC) C(ASTM D3278)	150 min
6.	SSI30/250 cycles(DIN51382)(ASTM 6278)	40/60

Recommended dosage is about 1-10 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 90C.

The product should be stored under the shade. Max outside temp about 40C. Product will be stable for at least 1 yrs if stored and handled properly.





KUSACRYL 1110

VI IMPROVER FOR MULTIGRADE ENGINE OILS

KUSACRYL 1110 is alkyl methacrylate type polymer, specially designed for uses as Viscosity Index Improver, in formulation of High Viscosity Index Gear Oils such as 75W90.

Its excellent shear stability good cold properties and low Brookfield Viscosities make KUSACRYL 1110 suitable for formulating multi grade gear oils. KUSACRYL 1110 has been optimized to impart properties like pour point, and stability.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	150-500 CST
4.	DENSITY@25C (ASTM D4052)	0.90 Typ. (0.89-0.94 range)
5.	FLASH POINT (COC) C (ASTM D3278)	150 min
6.	SSI 30/250 cycles (DIN 51382) (ASTM 6278)	4/10

Recommended dosage is 1-25 wt% in formulation

Maximum Blending temp is about 90 C.

The product should be stored under the shade.

Max outside temp about 40 C.

Product will be stable for at least 1yr if stored and handled properly.

NOTE: The information presented here is based on our present state of knowledge. All recommendation regarding the use of our products are in an advisory capacity, buyer and users should make their assessment of our products under their own conditions and for their own requirements. Hence, this should not therefore be constructed as guaranteeing specific properties of the products.



POUR POINT DEPRESSANTS



KUSAPOUR IBP

PPD FOR GROUP I/II OILS

KUSAPOUR IBP is a viscous Solution of Alkyl Methacrylate Polymer in Neutral Oils recommended for use as a Pour Point Depressant for Lubricating Base Oils. In finished Lubricants they are compatible with other commonly used additive.

KUSAPOUR IBP is used for Pour depressing Industrial and gear lubricants, Mono grade and Multi-grade crankcase oils. In addition to reducing the Pour Point, KUSAPOUR IBP is particularly effective in controlling low temperature viscosity under sheer conditions.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	50-400 CST
4.	DENSITY@25C (ASTM D4052)	0.89 Typ. (0.88-0.94 range)
5.	FLASH POINT (COC) C (ASTM D3278)	150 min

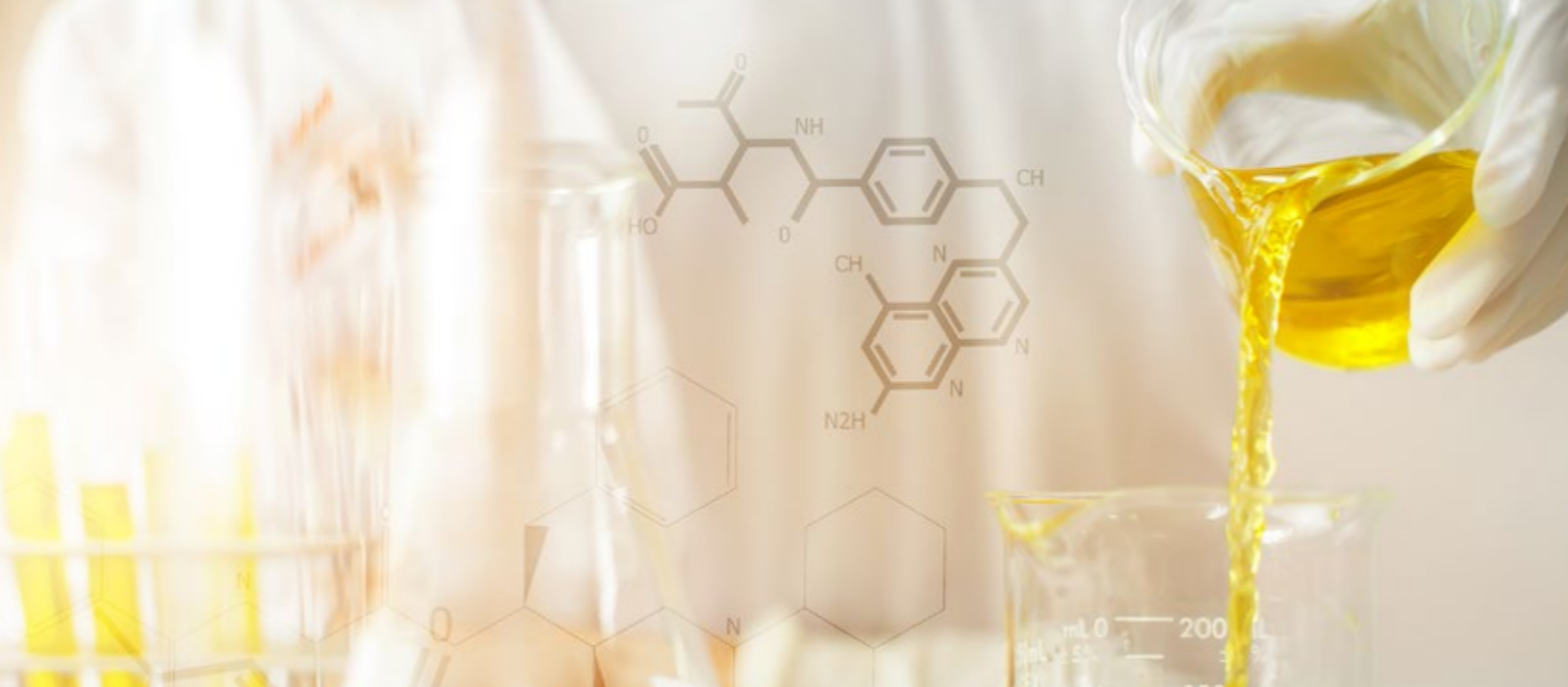
Recommended Dosage 0.1-0.5% for Group I, & Group II oils.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for atleast 1 yrs if stored and handled properly.





KUSAPOUR 3006

KUSAPOUR 3006 is a viscous Solution of Alkyl Methacrylate Polymer in Neutral Oils recommended for use as a Pour Point Depressant for Lubricating Base Oils. In finished Lubricants they are compatible with other commonly used additive.

KUSAPOUR 3006 is used for Pour depressing Industrial and gear lubricants, Mono grade and Multi-grade crankcase oils. In addition to reducing the Pour Point, KUSAPOUR 3006 is particularly effective in controlling low temperature viscosity under sheer conditions.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	200-600 CST
4.	DENSITY@25C (ASTM D4052)	0.91 Typ. (0.88-0.94 range)
5.	FLASH POINT (COC) C (ASTM D3278)	150 min

Recommended Dosage 0.1-0.5% for Group I and Group II and Group III oils.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for atleast 1 yrs if stored and handled properly.



KUSAPOUR 2657

KUSAPOUR 2657 is a viscous Solution of Alkyl Methacrylate Polymer in Neutral Oils recommended for use as a Pour Point Depressant for Lubricating Base Oils. In finished Lubricants they are compatible with other commonly used additive.

KUSAPOUR 2657 is used for Pour depressing Industrial and gear lubricants, Mono grade and Multi-grade crankcase oils. In addition to reducing the Pour Point, KUSAPOUR 2657 is particularly effective in controlling low temperature viscosity under sheer conditions.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE	Clear Viscous Liquid
2.	COLOUR	Pale Yellow to Amber
3.	VISCOSITY@100 C (ASTM D445)	200-500 CST
4.	DENSITY@25C (ASTM D4052)	0.90 Typ.
5.	FLASH POINT (COC) C (ASTM D3278)	150 min

Recommended Dosage 0.1-0.5% for Group I, Group II and Group III oils.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for atleast 1 yrs if stored and handled properly.



**EMULSIFIER PACKAGES FOR
METAL WORKING FLUIDS**



VICOL VCH - CUTTING OIL EMULSIFIER PACKAGE

TYPE	: Emulsifier for the formulation of Cutting Oils / Soluble Oils.
APPLICATION	: Recommended to be blended at 15% to 20% by weight in Paraffinic/Naphthenic Oils. Good emulsion characteristics are obtained in hard water. Antirust protection and germicidal properties are also provided.
COLOUR	: REDDIS H BROWN
APPEARANCE	: CLEAR LIQUID ACID
VALUE (EMULSIFIER)	: LESS than 25
pH OF EMULSION IN D.WATER	: 8 to 9.5
VISCOSITY @ 40C	: 200-300 CST
ASH CONTENT	: 1.8wt% Max

PERFORMANCE TEST

(OIL	: EMULSIFIER)
82 PARTS	: 18 PARTS)
EMULSION 5 % & 10 % IN	: STABLE
400 PPM HARD WATER	
FROTHING	: PASSES
COLD STABILITY	: STABLE
CAST IRON CORROSION	: 0 / 0-1
Cu. STRIP CORROSION	
@ 100 C FOR 3 HRS	: 1

PRECAUTIONS TO BE TAKEN

The Emulsifier is very sensitive to the base oil being used. Naphthenic Oils are the easiest to emulsify. However, due to cost and availability Paraffinic Oils are nowadays most commonly being used.

Usually, Group 1 oils such as SN70/SN100/SN150 are highly recommended for manufacturing of cutting oils. Emulsification proceeds smoothly with Group 1 oils. However, the source of Group 1 is also very important. The product can fail easily if there is a variation in the source of Base Oil procured. Hence, it is recommended to keep the source of Base oil constant. Usually, correction with Oleic Acid can take care of minor changes in the base oil quality.

The Water hardness and salts in the water can also sometimes contribute to problems of emulsification in the base oils. Our product is stable up to 1000 ppm in commonly occurring Calcium/Sodium salts. However, high chloride contents or any other salts could lead to problems in emulsification. It is advised to let us know of any such issue so that the product can be designed to meet the requirements. Separate additives are required to achieve the required stability.

The emulsifiers are prone to attack by microbes present in the system. The package does contain a Biocide/Fungicide that takes care of these problems. However, it is recommended to keep the system clean and top up the Cutting Oil with Biocides every three weeks to prevent further growth of microbes and avoid smell related issues.



VICOL S 50 - NEAT CUTTING OIL EMULSIFIER PACKAGE

Vicol S 50 is a Package for Neat Cutting Oils. It contains additives for oxidation stability, corrosion protection, load bearing &, antiwear protection. It can be used for many base oils with recommended starting treat rate of 0.5-5wt%. It has very good Copper Corrosion Activity.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE@30C	Clear Liquid
2. VISCOSITY @ 40 C	100-300 CST
3. FLASH POINT	140 C min
4. Copper Corrosion (ASTM D130)	2a Max

Blending Temp should be <65 C.

The product should be stored in cool shade away from heat source. The product will be stable for 1 yr.

VIBSOL ES 200 - SPRAY OIL EMULSIFIER PACKAGE

VIBSOL ES 200 is a blend of various non-ionic and fatty acid based components. It is used as an emulsifier for making spray oils.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE	Clear Liquid
2. COLOUR	Colorless to Yellow
3. WATER wt%	10% Max
4. Sp. GRAVITY @ 20C	0.9-0.95
5. pH 1% SOLUTION IN D/Water	6-8

PERFORMANCE:

5 parts ES 200 + 95 parts White Oil.
Above 1 Part + 30 parts Soft Water
will give Stable Emulsion





VIBSOL AEC 43 - KNITTING OIL EMULSIFIER PACKAGE

VIBSOL AEC 43 is a knitting oil emulsifier made of esters, non-ionic surfactants and carboxylic acids. It provides good antistatic properties and improves fiber/fiber cohesion. It is designed to give EP property, corrosion properties as well as excellent emulsification properties and scouring properties.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE	Clear Liquid
2. COLOUR	Yellow to Amber
3. VISCOSITY @ 40 C (CST)	20-40
4. 2% PH in D/Water	6.5-9.5
5. SOLUBILITY IN WATER	Gives Emulsion

Recommended dosage is 8-10% depending on the End customers requirement. Maximum blending temperature is about 70 C. Product will be stable for atleast 1 yr if stored properly.

VIBSOL AEC 200 - CONING OIL EMULSIFIER PACKAGE

VIBSOL AEC 200 is a coning oil emulsifier used in many textile applications. It contains detergent, dispersant, antistatic additives in it. It gives excellent emulsification properties and scouring properties.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE	Clear Viscous Liquid
2. COLOUR	Yellow to Amber
3. ACID VALUE	10-20
4. 2% PH in D/Water	6-8
5. MOISTURE	<8% Max
6. SOLUBILITY IN WATER	Gives Emulsion
7. SP. Gr @ 30 OC	0.96-0.98

Recommended dosage is 8-12% Maximum blending temperature is about 80 OC. Product will be stable for atleast 1 yr if stored properly.



ADDITIVE PACKAGES



TAMMECH SERIES DI PACKAGES

TAMMECH 8668

Description

TAM 8668 is a high base number, multi-function internal combustion engine oil additive package. With low treat rate it can meet the requirements of SB/CD to CD/CF Grades.

Treat Rate

API Grade	Mono Grade	Multi Grade
SB/CB	1.8 %	2.0 %
SC/CC	2.7 %	3.0 %
SF/CD	4.0 %	4.4 %
CF/CD	5.3 %	5.8 %

Characteristics

Test	Unit	Method	Range
Appearance	-	Visual	Brown Viscous
Density@20 °C	Kg/m3	ASTM D4052	Report
Calcium	m%	ASTM D4951	≥ 6.0
Zinc	m%	ASTM D4951	≥ 2.3
Phosphorus	m%	ASTM D4951	≥ 2.0
K. V @ 100 OC	cSt	ASTM D445	Report
TBN	mg KOH/g	ASTM D2896	≥ 180
Flash Point	OC	ASTM D93	≥ 170

Handling

Blending temperature should not exceed up to 65°C. For long term storage keep the material under 50°C in a clean, dry and ventilating warehouse.

This Technical data sheet and MSDS contain information believed to be reliable. No warranty is made however to the information beyond the control of TAJ AL MULOOK LLC. Users of the product are responsible for determining the suitability and safety of this or any product for any specific application.

TAMMECH 2987

Description

TAMMECH 2987 is a HDDO Additive Package and is used in combination with TAMMECH 2957 additive. It is a multipurpose cascade package and is an economic solution which fulfills and exceeds mainstream HDDO requirements. It has been formulated and developed in such a way that allows oil blenders to manufacture a wide range of finished fluids with minimal number of booster packages. Its performance leads to optimal properties with respect to soot handling and wear control as it incorporates HiDOG technology. Moreover, it has been tested under international laboratories with the use of standardized base stocks of utmost quality and its data set falls under main HDDO viscosity grades including SAW 10W-40. Furthermore, it meets the latest European OEMs requirements (ACEA 2008).

Treat Rate (Wt%)

API Grade	TAMMECH 2987 (Wt%)	TAMMECH 2957 (Wt%)
CF	4.3%	1.2%
SJ/CF/CF-4	5.55%	1.6%
SJ/CF/CF-4	6.3%	1.8%
SJ/SL/CF/CF-4/CG-4	9.6%	1.1%
SJ/SL/CF/CF-4/CG-4/CH-4	12.3%	0.9%
SJ/SL/CF/CF-4/CG-4/CH-4/CI-4	16.2%	-

Characteristics

Test	Unit	Method	Value
Density@15 °C	Kg/L	ASTM D4052	0.956
K. V @ 100 OC	mm ² /s	ASTM D445	152
TBN	mg KOH/g	ASTM D2896	66
Flash Point (PMCC)	OC	ASTM D92	135 min

Handling

Blending temperature should not exceed up to 70°C. Moreover, the shelf life at ambient temperature of TAMMECH 2987 is 12 months.

This Technical data sheet and MSDS contain information believed to be reliable. No warranty is made however to the information beyond the control of TAJ AL MULOOK LLC. Users of the product are responsible for determining the suitability and safety of this or any product for any specific application.

AUTOMOTIVE ENGINE OIL ADDITIVE PACKAGE

Description

TAMMECH 6725 is a performance additive package for the efficient formulation of passenger car, light-duty diesel and Four-Stroke motorcycle engine oils. TAMMECH 6725 has been specially designed to offer basic API performance levels from SG/CD to the SL/CF at the most efficient market treat rates without the need of booster package.

TAMMECH 6725 can be used for broad base oils.

TAMMECH 6725 performs JASO MA and MB 4-T motorcycle applications.

Recommended Dosage

API Performance Level	TAMMECH 6725, %wt
SL/CF	6.8
CF-4/SL	6.8
SL/CF/JASOMA	6.8
SJ/CF/JASOMA	5.45
SG/CD	4.9

Characteristics

Property	Method	Value
Appearance	Visual	Dark Brown Slightly Hazy Liquid
Color	ASTM D1500	L 8.0
Calcium, %wt	ASTM D4951	3.41
Zinc, %wt	ASTM D4951	1.62
Phosphorus, %wt	ASTM D4951	1.47
Molybdenum, %wt	ASTM D4951	0.17
Sulfur, %wt	ASTM D5291	3.8
Total Base Number, mg KOH/g	ASTM D2896	112
Density @ 15 °C, g/ml	ASTM D1298	0.998
Kinematic Viscosity @ 100 °C, cSt	ASTM D445	125
Flash Point (COC), °C	ASTM D92	190

Handling The recommended maximum operating temperature is 70 . For specific safety, handling and toxicity information please refer to the current Material Data Safety Sheet (MSDS) available.

PASSENGER CAR ENGINE OIL ADDITIVE PACKAGE

Application

TAMMECH 6600 is a passenger car engine oil additive to meet ILSAC GF-5/ API SN and API SM performance needs.

Recommended dosage

For API SN and ILSAC GF-5, the recommended treat rate for TAMMECH 6600 is 8.5 % wt in appropriate Group II or Group III base stocks, with no additional PPD required.

For API SM, the recommended treat rate for TAMMECH 6600 is 7.9 % wt in appropriate Group II or Group III base stocks, with no additional PPD required.

Characteristics

Property	Method	Value
Appearance	Visual	Brown Viscous liquid
Boron, %wt	ASTM D4951	0.21
Calcium, %wt	ASTM D4951	2.24
Phosphorus, %wt	ASTM D4951	0.91
Molybdenum, %wt	ASTM D4951	465
Zinc, %wt	ASTM D4951	1.00
Nitrogen, %wt	ASTM D5291	0.99
Total Base Number, mg KOH/g	ASTM D2896	81
Density @ 15 °C, g/ml	ASTM D1298	0.973
Kinematic Viscosity @ 100 °C, cSt	ASTM D445	73
Flash Point, (COC), °C	ASTM D92	135min

Storage, Handling & Toxicity

Recommended maximum storage handling & blending temperature is 70 °C. For specific safety, handling and toxicity information please refer to the current Material Safety Data Sheet available.



INDUSTRIAL SPECIALITY ADDITIVES

HF-S91 (HYDRAULIC OIL ADDITIVE PACKAGE)

HF-S91 is an anti-wear package for Hydraulic Fluids. It contains additives for oxidation stability, corrosion protection, filterability, hydrolytic stability, anti-wear protection. It can be used for many base oils with recommended starting treat rate of 0.45%.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE@30C	Clear Liquid
2.	COLOUR	Yellow to Amber
3.	VISCOSITY @ 40 C	170-210 CST
4.	FLASH POINT	140 C min
5.	% P	5.8-6.5 wt%
6.	% Zn	7.5-8 wt%

Blending Temp should be <65 C.

The product should be stored in cool shade away from heat source. The product will be stable for 1 yr.



TAMMECH G343 (GEAR OIL ADDITIVE PACKAGE)

Application

TAMMECH G343 is a premium grade, non-chlorine, extreme pressure additive system for automotive gear oils.

At the recommended treat rate of 4.4 %wt in suitable base stocks, it produces finished gear lubricants meeting API GL-5 service classifications.

At the lower treat rate of 2.2 %wt it will produce finished gear lubricants of a quality suitable for API service classification GL-4.

For industrial application the treat rate is 1.5 %wt.

Typical Data

Property	Method	Value
Appearance	Visual	Clear Yellow Liquid
Color	ASTM D1500	1.0
Phosphorus, %wt	ASTM D4951	2.35
Sulfur, %wt	ASTM D5291	35
Density @ 15 °C, g/ml	ASTM D1298	1.08
Kinematic Viscosity @ 40 °C, cSt	ASTM D445	49
Kinematic Viscosity @ 100 °C, cSt	ASTM D445	7
Flash Point (COC), °C	ASTM D93	110

Storage, Handling & Toxicity

When handling this product, chemical type goggles and impervious gloves should be worn.

Appropriate respiratory protective equipment should be used during heating operations. In the event of a release or spill adsorb on fire retardant treated sawdust, diatomaceous earth, et cetera and dispose of at an appropriate waste disposal facility. A maximum temperature of 60 °C should be observed for blending and handling. However, it is strongly recommended that for blending and long term storage the temperature should not exceed 60 °C. For specific safety, handling and toxicity information please refer to the current Material Safety Data Sheet (MSDS) available.



TAMMECH A484 (AUTOMATIC TRANSMISSION FLUID ADDITIVE)

Application

TAMMECH A484 is a very low ash versatile additive package formulated to meet high quality, automatic transmission fluids in a wide variety of base stocks. TAMMECH A484 will exceed the requirements of the General Motors DEXRON® IIIH specification and TAMMECH A484 can also be used to formulate DEXRON® IIIIG, DEXRON® IID and TASA level fluids .

Features: TAMMECH A484 when formulated with appropriate base stock it can exceed the requirements of all the following passenger car and commercial vehicle service fill specifications:

GM Type A Suffix A (TASA)
 Voith 55.6335
 GM DEXRON® IID / III G/ III H
 CAT TO-2 / MAN 339 Type Z-1 and Type V-
 Allison C-4 / Allison TES 389
 ZF TE-ML -02F, -03D, -04D, -14A and -17C
 ZF TE-ML -09 and -11B * MB 236.1 and MB 236.5
 Ford MERCON®
 Volvo 97341

Treat rate :W/W

TYPE A	5%
DEXRON IID / TASA	7.5%
DEXRON III	9%
DEXRON III H / FORD MERCON	12%

Typical Characteristics

Specifications	Typical Values
Appearance	Dark brown liquid
Density at 15°C, g/ml	0.93
Viscosity at 100°C, mm ² /s	Reported
Flash Point (PMC), °C	125
Phosphorus, % weight	0.27
Sulphur, % weight	1.14
Nitrogen, % weight	0.90
Molybdenum, % weight	0.12

Note: Taj Al Mulook makes no representation or warranty, express or implied, including of merchantability or fitness for a particular purpose. Under no circumstances Taj Al Mulook be liable for consequential, incidental or indirect damages for alleged negligence in connection with the product. Data and results are based on controlled laboratory evaluations and must be confirmed by the Buyer by testing or analyzing at their end before its intended conditions of use and applications.



COMPONENTS

ANTI-OXIDANTS

KUNOX A8000

KUNOX A8000 is an octylated/butylated Aminic Antioxidant. It helps prevent oxidation of base oils thus maintaining the viscosity and extending the life of the lubricant.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE @ 40C	Clear Liquid
2.	COLOUR	Pale Yellow to Reddish Brown
3.	FLASH POINT (COC) C (ASTM D92)	150 min
4.	VISCOSITY @ 40 C (CST) (ASTM D445)	225-450
5.	Sp. Gravity @ 30 C (ASTM D4052)	0.96-0.98

Recommended dosage is 0.1-0.5 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for atleast 1 yr if stored and handled properly.

KUNOX A9000

KUNOX A9000 is a nonylated Aminic Antioxidant. It helps prevent oxidation of base oils thus maintaining the viscosity and extending the life of the lubricant.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE @ 40C	Clear Liquid
2.	COLOUR	Yellow to Brown
3.	FLASH POINT (COC) C (ASTM D92)	150 min
4.	VISCOSITY @ 40 C (CST) (ASTM D445)	425-900
5.	Sp. Gravity @ 30 C (ASTM D4052)	0.94-0.965

Recommended dosage is 0.1-0.5 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C.

Product will be stable for atleast 1 yrs if stored and handled properly.

ANTI-FOAMS

VIBFOAM SM

VIBFOAM SM is a silicon based oil soluble defoamer used in many applications from textiles, leather, and lubricants to many other industries. The product is effective over a wide range of pH and temperatures and is compatible with other additives.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE@30C	TurbidLiquid
2.	COLOUR	Colorless to Yellow
3.	MOISTURE%	<1
4.	2% PH in D/WATER	5 to 8
5.	SOLUB.IN WATER	Insoluble

The product should be stored in cool shade away from heat source. The product will be stable for 1 yr.

VIBFOAM AMP

VIBFOAM AMP is a acrylic based oil soluble defoamer used in many applications from textiles, leather, and lubricants to many other industries. The product is effective over a wide range of pH and temperatures and is compatible with other additives.

No.	PARAMETERS	SPECIFICATIONS
1.	APPEARANCE@30C	ClearLiquid
2.	COLOUR	YellowtoAmber
3.	MOISTURE%	<1
4.	2%PHinD/WATER	5to8
5.	SOLUB.INWATER	Insoluble

Dosage recommended is 0.01-1% depending on the application.

The product should be stored in cool shade away from heat source.

The product will be stable for 1 yr.



ZDDPs

KUNOX M4813

KUNOX M4813 is a ZDDP for engine oil, greases and hydraulic oils. It is used to impart oxidation stability as well as anti-wear properties.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE	Clear to Slight Hazy Liquid
2. COLOUR	Pale Yellow to Amber
3. FLASH POINT(COC) C	150 min
4. %Zn	8-10% Typical
5. %P	7-9% Typical
6. %S	14-17%

Recommended dosage is 0.1-2 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 90 C.

The product should be stored under the shade. Max outside temp about 40 C. Product will be stable for at least 1 year if stored and handled properly.



KUNOX S8811

KUNOX S8811 is a ZDDP for engine oil, greases and hydraulic oils. It is used to impart oxidation stability as well as antiwear properties.

No. PARAMETERS	SPECIFICATIONS
1. APPEARANCE	Clear to Slight Hazy Liquid
2. COLOUR	Pale Yellow to Amber
3. FLASH POINT (COC) C (ASTM D92)	150 min
4. %Zn (By AAS)	7.6-8.3%
5. %P	7.2-7.8% Typical
6. VISCOSITY @ 40 C (ASTM D445)	150-250 CST
7. COPPER CORROSION 1% in SN150	
Group 2 for 3hrs/160 C	1a-1b

AAS – Atomic Absorption Spectra
Sulphur weight% will be about 16% Typical.

Recommended dosage is 1-00 wt% in formulation depending on base oil, other additives and properties desired.

Maximum Blending temp is about 60 C.
The product should be stored under the shade.
Max outside temp about 40 C.
Product will be stable for at least 1 yrs if stored and handled properly.





TAM Z-818

POLY ISO BUTYLENES (PIB)

Description

TAM Z-818 is a general purpose multi-effect additive which is used to formulate various lubricating oils except silver metal parts. The product is amber transparent liquid and the recommended dosage is 0.5-3.0%.

Characteristics

Test	Unit	Method	Result
Density@20 °C	Kg/m3	ASTM D4052	1.08 – 1.13
Phosphorus	m%	ASTM D4951	7.2 – 8.5
Sulphur	m%	ASTM D4927	15 – 18
Zinc	m%	ASTM D4951	8.5 – 10
Flash Point	°C	ASTM D92	≥180

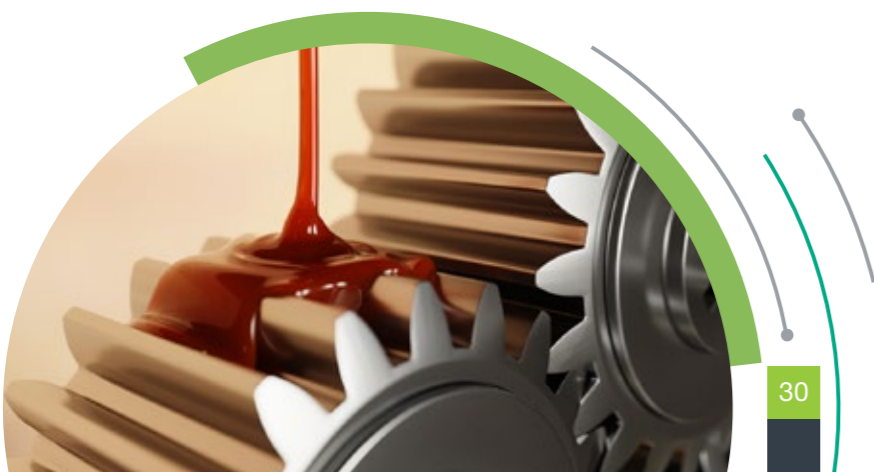
Applications

Excellent performance of anti-oxidation and anti-corrosion.
Provide the lubricant with fine anti-wear ability under extreme pressure.
Good thermal stability and hydrolytic stability.

Handling

Blending temperature should not exceed up to 65°C. For long term storage keep the material under 50°C in a clean, dry and ventilating warehouse.

This Technical data sheet and MSDS contain information believed to be reliable. No warranty is made however to the information beyond the control of TAJ AL MULOOK LLC. Users of the product are responsible for determining the suitability and safety of this or any product for any specific application.



Introduction

PolyButene Compounds shear stables Ashless Base-Stock for modifying/improving the viscosity of Lube Oils. These Polybutenes are available with Molecular Weight 900 – 2500 and Viscosity 225 – 4500 cSt @ 100 OC.

Specifications

PROPERTIES	TEST METHOD	UOM	TAM 950PB	TAM 1300PB	TAM 1700PB	TAM 2400PB
A. PHYSICAL						
MOLECULAR WEIGHT	GEL PERMEATION CHROMATOGRAPH	NO. AVERAGE	950 ± 50	1300 ± 100	1700 ±100	2400 ±100
VISCOSITY	ASTM D -445	SSU @ 100 °C	-	-	-	-
		CST @ 100 °C	230 ± 30	650 ±50	2000 ±100	4200 ±350
VISCOSITY INDEX	ASTM D -2270		110	160	180	250
SPECIFIC GRAVITY	ASTM D -1298	15 / 15 °C	0.88 – 0.89	0.89 – 0.90	0.90 – 0.92	0.91 – 0.93
FLASH POINT (Min) Cleveland Open Cup	ASTM D -92	°C	180	220	230	250
FLASH POINT Pensky Martin Closed Cup	ASTM D -93	°C	155	170	180	190
POUR POINT	ASTM D -97	°C	-	-	-	-
COLOUR	ASTM D -1209	APHA	70 ± 20	70 ±20	70 ±20	70 ±20
B. CHEMICAL						
ACID NUMBER (Max)	ASTM D -974	Mg of KOH	0.02	0.02	0.02	0.02
WATER CONTENT (Max)	ASTM D -6304	PPM	50	50	50	50

Shelf life: 24 Months

Storage Conditions: To be stored in a clear, cool and dry place.



MAGNESIUM BASED TBN

TAM-CS400

TAM MS 400

Description

TAM-CS400 is an over based calcium petroleum sulfonate, used in the blending of Marine Oil and high quality Internal Combustion engine oil, especially against high-sulphur fuel.

Characteristics

Test	Unit	Method	Result
Density@20 °C	Kg/m3	ASTM D4052	1.15 – 1.25
Calcium	m%	ASTM D4951	>14.5
Sulphur	m%	ASTM D4927	1.2 – 1.4
K.V@100 °C	cSt	ASTM D445	>50 – 120
TBN	Mg KOH/g	ASTM D2896	>395 – 415
Flash Point	°C	ASTM D92	≥180

Applications

Imparts excellent rust prevention.

Imparts added detergency.

Used as short-term rust preventatives.

Used as a dispersant and corrosion inhibitor in engine oil. It is non-staining having detergent, dispersant properties. Environmental Friendly, Biodegradable without side effect

Handling

Blending temperature should not exceed up to 65°C. For long term storage keep the material under 50°C in a clean, dry and ventilating warehouse.

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Description

TAM MS 400 is a super overbased synthetic magnesium sulfonate which is manufactured from long-chain linear alkylbenzene sulfonic acid via neutralization and high alkalization reaction. TAM MS 400 being a major metal detergent, boasts acid neutralization capacity, exhibits good anti-rust property and high temperature detergency. It is mainly used for different ICE oils.

Characteristics

Test	Unit	Method	Typical Value
Density @20 °C	Kg/m3	ASTM D4052	1113
Magnesium Content	m%	ASTM D4951	9.0
Water Content	m%	ASTM D95	0.07
K.V @100 °C	mm2/s	ASTM D445	148
TBN	mg KOH/g	ASTM D2896	404
Flash Point (COC)	°C	ASTM D92	180

Handling, Storage & Safety

The maximum storage temperature should not exceed 45°C. The product is stored with a shelf life of 2 years and contact with strong anti-oxidant should be avoided while in use.

This product is non-flammable, non-explosive and non-corrosive. It needs no special protection since it is same as petroleum products in terms of safety, environmental protection, use and other aspects.

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OCP BASED VII



TAM 4040

TAM 4040 is a solid granular Co-Polymer used in the blending of various Mono and Multi grade Oils. It is a Viscosity Index improver with SSI 35.

Specifications:

Properties	Method	Specification
Density, Base Resin	ASTM D792	0.862 – 0.864
Ethylene	ASTM D3900	55
Ash Content	ASTM D1416	< 0.09%

Method: 8.5 – 9.5% of TAM 4040 in Base Oil SN 500 produces a Viscosity of 1700 – 1900 Cst @ 100°C. 9.5-10.5% of TAM 4040 in Base Oil SN 150 produces a viscosity of 1700-1900 CSt@ 1% dissolution of this VI in SN 500 shows an increase of 1.2Cst. The Index of the Oil will be increased based on the grade of oil used.

Dissolving time approx. 5-9 hours @ 120°C.

Packing: TAM 4040 is packed in 25 kg PE bags.



TAM 7040

Specifications:

Properties	Method	Specification
Density 23°C,	ASTM D1505	0.861
Ethylene	ASTM D3900	15% EMCC Method
MFR	ASTM D1238	20 g/10min
Vicat softening point	ASTM D1525	48°C

Application:

TAM 7040 is a solid granular Co-Polymer used in the blending of various Mono and Multi grade Oils. It is a Viscosity Index improver with SSI 28.

Method:

13% of TAM 7040 in Base Oil SN 150 with viscosity of 5-5.5 @100°C produces a Viscosity index improver of 1000 Cst @ 100°C.

Results:

Motor Oils blended with TAM 7040 passes CCS.

Dissolving time approximately 5-9 hours @ 120°C. (Min)

Packing:

TAM 7040 is packed in 25 kg PE bags.





SYNTAMAX 1185

Syntamax 1185 is an olefin copolymer viscosity index improver based on a 22 SSI polymer designed to blend industrial, gasoline and diesel crankcase lubricants, particularly when the excellent shear stability is needed.

Advantages:

- Excellent Shear Stability and Low temperature properties.
- Excellent Pour Point characteristics with TAM PPDs.
- Used with a wide range of Base Oils.

Physical Characteristics

Property	Typical Value
Appearance	Clear to hazy viscous liquid
FlashPoint,C,PMCC	>200
Specificgravity@15.6C	0.86
KinematicViscosityat100C (Centi-stoke)	1000-1200

Approximate treat rate:

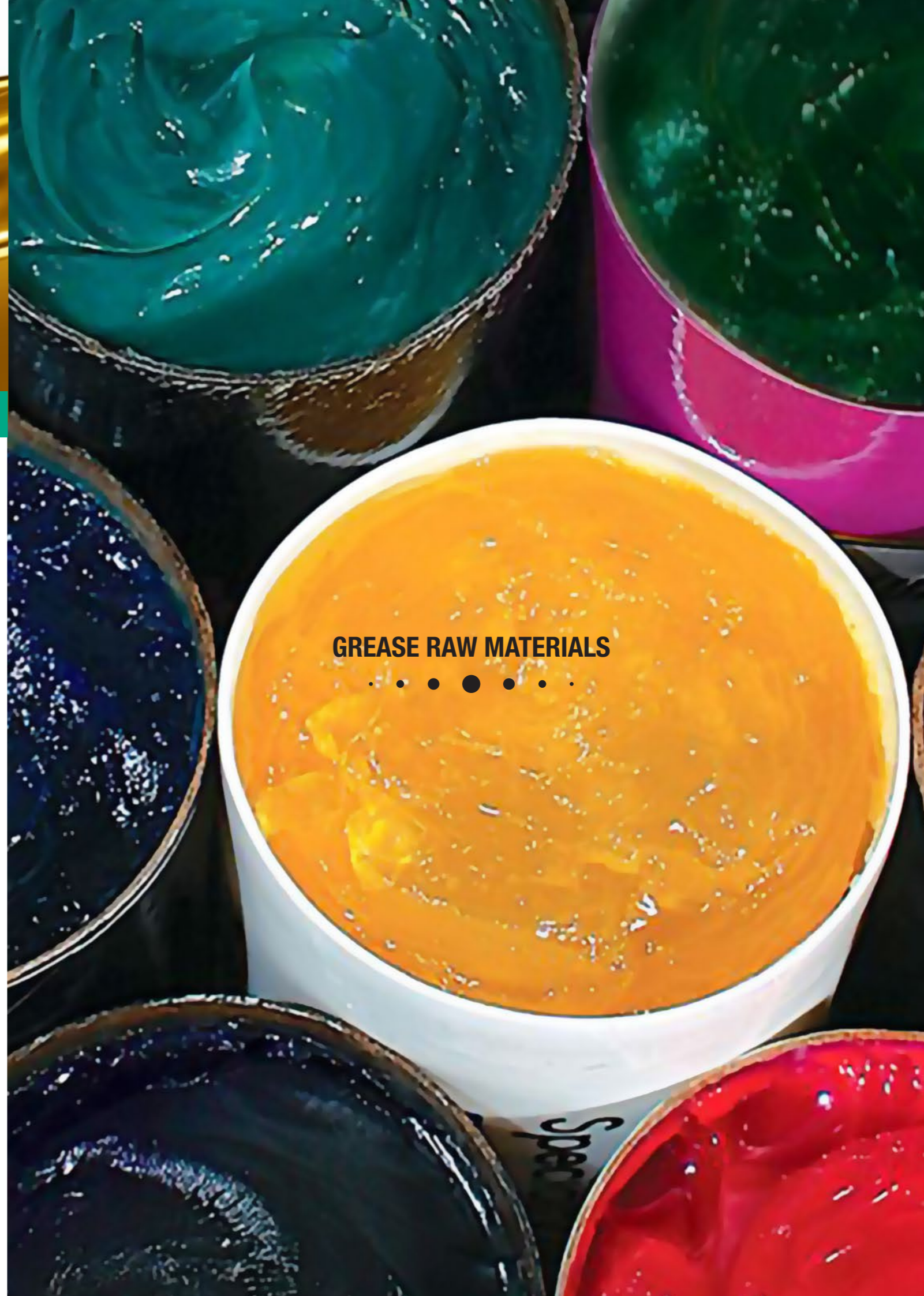
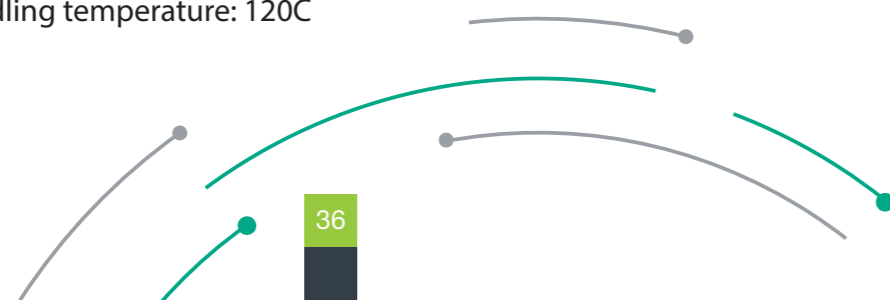
5W30	10W30	10W40	15W40	20W50
6.3-9.5%	4-6.3%	8-12%	5-9%	5-8%

Handling and Storage:

Recommended unloading temperature: 85 C

Max storage temperature: 70C

Max short term handling temperature: 120C



GREASE RAW MATERIALS





12-HYDROXY STEARIC ACID (12-H.S.A) FLAKES

Description

12-Hydroxy Stearic Acid is the mixed fatty acid obtained by hydrolysis of Hydrogenated Castor Oil. It is used in manufacturing of greases. It is high melting, brittle, waxy solid at ambient temperatures. It should be stored away from heat to avoid deterioration.

Test Parameters For 12 H.S.A

TEST PARAMETERS	SPECIFICATIONS	TEST METHOD
Appearance	Flakes	Visual
Acid Value	180 – 185	AOCS Te 1a – 64
Iodine Value	< 3	AOCS Tg 1a – 64
Colour Lovibond 1 inch	< 2.0 red, < 10.0 YELLOW	AOCS Cc 13e – 92
Colour Gardner	<5	AOCS Td 1a - 64
Colour heat stability	7 max	AOCS TD 3a – 64
Melting point	74 – 79	AOCS Cc 1 – 25
Titer	70 – 75	AOCS Tr 1a – 64
Hydroxyl value	155 – 165	AOCS Cd 13 – 60
Saponification value	182 – 192	AOCS Cd 3 – 25
Unsaponifiable matter	< 1	AOCS Ca 6a – 40
Moisture	< 1	AOCS Ca 2c – 25
FREE FROM ORGANIC BLEACHING	FREE	Visual
FREE FLOWING NO LUMPS	FREE	Visual
NaCl Content	< 50	VOLHARD

Supply Options

Dispatched and delivered typically in 25 KG Poly Lined paper bags or 25 KG HPDE bags. Customer specific packs/sizes are available on request to suit specific bulk requirements.

Storage & Shelf Life

12-Hydroxy Stearic Acid can be stored between 10 °C to 40°C under shade dry conditions for up to <2> two years from the date of its manufacturing.



HYDROGENATED CASTOR OIL (H.C.O) FLAKES / POWDER

Description

Hydrogenated Castor Oil (H.C.O) also known as Castor Wax is a hard, brittle and high melting solid which is tasteless and odorless. HCO is chemically the triglyceride of primarily 12-Hydroxy Stearic Acid (12 H.S.A). It is insoluble in water with limited solubility in most organic solvents. Moreover, HCO is available in the form of flakes or powder and melts down to give a clear transparent liquid. In addition, it is a non-toxic and a non-hazardous material.

Test Parameters

TESTS	TEST METHOD	UNIT	PARAMETERS
1 Appearance	Visual	-	White Flakes
2 Colour Gardner	AOCS Td 1a-64	-	1 to 2 Gardner
ColourApha		-	750 Max
Colour Lovibond 5 ¼ 'Cell		-	20 Yellow Max. 2 Red Max
3 Acid Value %	Aocs cdc.3d.63	mgKOH/gm	1 to 3
4 Iodine Value	Aocs cd 1.25	gl2/100g	3 to 4
5 Hydroxyl Value	Aocs cd 13.60	mgKOH/gm	157 Min
6 Saponification Value	Aocs cd 3.25	-	178 Min
7 Melting Point	Aocs cd 1.25	°C	84 to 88 ° C
8 Unsaponifiable Matter	Aocs TK 1a.64	-	1.0 Max
9 Nickel PPM	AAS or ICP	PPM	3 to 5
10 12 Keto Stearic Acid	G.C.	-	4 Max
11 12 HSA	G.C., Aocs cd 1.62	%	83 to 87
12 Particle Size	-	-	-
13 Flash Point	-	°F	425
14 Metal Catalyst	-	PPM	20 Max

Supply Options

Dispatched and delivered typically in 25/50 Kg HDPE/PP bags with both options of pelleted and non-pelleted.

Shelf Life

HCO can be stored between 100 C to 400 C under shade and dry conditions for up to two years from its manufacturing date.



LITHIUM HYDROXIDE MONOHYDRATE

Description

A free-flowing granular solid well suited for use in the manufacture of lithium greases, dyestuffs, specialty resins and many other chemical specialties. It has a narrow particle size distribution and a low fines content.

Test Parameters

	Chemical	Unit	Analysis	Specification
1	LiOH	%	57.4	56.5 min
2	CO ₂	%	0.07	0.25 max
3	Na	%	0.011	0.03 max
4	K	%	0.004	0.01 max
5	CaO	%	0.003	0.03 max
6	Mg	%	<0.0005	0.001 max
7	Al	%	0.003	0.01 max
8	Fe ₂ O ₃	%	<0.0007	0.0015 max
9	Si	%	0.001	0.04 max
10	Pb	%	<0.0005	0.0005 max
11	Cl	%	0.005	0.01 max
12	SO ₄	%	-	0.03 max
13	Insoluble in HCl	%	<0.008	0.008 max

Supply Options

Dispatched and delivered typically in 25/50 Kg HDPE/PP bags with both options of pelleted and non-pelleted.

Handling/storage/disposal:

Do not get in eyes, on skin or clothing. Avoid breathing dust. Wash thoroughly after handling. Keep container closed. Store away from acids and water. Dispose of waste according to local and Federal laws and regulations.



BRAKE FLUIDS

BRAKE FLUID DOT 3

Description

Dot 3 hydraulic brake fluid is a glycol ether based fluid produced from virgin materials to not only meet, but exceed the requirements of the worldwide recognized standards of hydraulic brake fluids i.e FMVSS No 116 DOT 3, SAE J1703 and ISO4925 Class 3.

It possesses numerous properties which ensures a very safe and reliable functioning of vehicles braking system. The properties are as follows:

High boiling point: It minimizes the possibility of vapor lock under very extreme conditions.

Optimal viscosity: This crucial property helps maintain system responsiveness in very low temperature conditions and simultaneously helps maintain enough lubricity of the system and prevents leakage at very high operating temperatures.

Corrosion Inhibition: It helps to protect almost all the metallic components in the braking system from corrosion and any potential failure of the system.

Rubber compatibility: It extends the working life of the seals of the system to maximum hence ensuring safe operation of the system.

Fluid compatibility: This property allows safe mixing with any other brake fluids that meet the specification of DOT 3

Typical properties

Parameter	Units	Results	Limits Minimum	Maximum	Method
Appearance		Pale straw colored liquids			
Specific Gravity at 15/15 oC	-	1063	-	-	ASTM D4052
Equilibrium Reflux Boiling Point	°C	244	205	-	FMVSS 116.S6.1
Viscosity at -40 oC	mm2/s	1350	-	1500	FMVSS 116.S6.3
pH value 50% vol Et/H2O blend		9.8	7.0	11.5	FMVSS 116.S6.4
Water content, KF, Brake fluids	%(m)	0.10	-	0.2000	FMVSS 116.S7.2
Wet Equilibrium Reflux Boiling Point	°C	144	140	-	FMVSS 116.S6.2

Storage and Handling

Brake fluids can be stored in bulk mild steel tanks and drums. In order to prevent any absorption of moisture during the storage of Brake fluid, it is recommended that a desiccant unit in the tank vent is used. Moreover, the use of appropriate personal protective equipment (PPE) is recommended. See the product MSDS for details.

Furthermore, the contamination of brake fluids must be avoided at all times, because the boiling point of the Brake Fluid will be dramatically lowered resulting in reduced safety margins. In addition, if the fluid gets contaminated with mineral oil based products; this can result in degradation of system seals and potential failure of the system.

BRAKE FLUID DOT 4

Description

Dot 4 hydraulic brake fluid is a glycol ether based fluid produced from virgin materials to not only meet, but exceed the requirements of the worldwide recognized standards of hydraulic brake fluids i.e FMVSS No 116 DOT 4, SAE J1704 and ISO4925 Class 4.

It possesses numerous properties which ensures a very safe and reliable functioning of vehicles braking system. The properties are as follows:

High boiling point: It minimizes the possibility of vapor lock occurring in wheel cylinder under very extreme conditions.

High wet boiling point: It maintains a continuous and long lasting protection from vapor lock by ensuring a high boiling point throughout the service life of the fluid.

Optimal viscosity: This crucial property helps maintain system responsiveness in very cold temperature conditions and simultaneously helps to maintain adequate lubricity of the system and prevents leakage at very high operating temperatures.

Corrosion Inhibition: It helps to protect almost all the metallic components in the braking system from corrosion that can cause excessive seal wear or loss of fluid and any potential failure of the system.

Rubber compatibility: It extends the working life of the seals of the system to maximum hence ensuring safe operation of the system, owing to the fact that range of elastomeric are commonly found in braking systems.

Fluid compatibility: This property allows safe mixing with any other brake fluids that meet the specification of DOT 3 and DOT 4.

Fluid Stability: It ensures stable performance characteristics for extended and reliable service life against oxidation and high temperature conditions.

Typical properties

Parameter	Units	Results	Limits Minimum	Maximum	Method
Appearance		Pale straw colored liquids			
Specific Gravity at 20/20 oC	-	1.04	-	-	ASTM D4052
Equilibrium Reflux Boiling Point	°C	265	230	-	FMVSS 116.S6.1
Viscosity at -40 oC	mm2/s	1400	-	1800	FMVSS 116.S6.3
Viscosity at 100 oC	mm2/s	2.1	1.5		FMVSS 116.S6.3
pH value 50% vol Et/H2O blend		8.0	7.0	11.5	FMVSS 116.S6.4
Water content, KF, Brake fluids	%(m)	0.10	-	0.2000	FMVSS 116.S7.2
Wet Equilibrium Reflux Boiling Point	°C	163	155	-	FMVSS 116.S6.2

Storage and Handling

Brake fluids can be stored in bulk mild steel tanks and drums. In order to prevent any absorption of moisture during the storage of Brake fluid, it is recommended that a desiccant unit in the tank vent is used. Moreover, the use of appropriate personal protective equipment (PPE) is recommended. See the product MSDS for details.

Furthermore, the contamination of brake fluids must be avoided at all times, because the boiling point of the Brake Fluid will be dramatically lowered resulting in reduced safety margins. In addition, if the fluid gets contaminated with mineral oil based products; this can result in degradation of system seals and potential failure of the system.



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