



THE LAB MARKET REPORT

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LAB PRICES

The price environment for U.S. refined petroleum products was sent into chaos as a result of Hurricane Rita which closed refineries and chemical plants along the Texas and Louisiana Gulf coast. This has compounded existing problems caused by the earlier Katrina which had little impact on LAB operations. Although crude oil prices have seen only modest movement due to Hurricane Rita, the markets for distillates and gasoline have skyrocketed. Prices for jet kerosene on the USGC reached \$2.52/gallon on September 27 (\$834/ton) and peaked at \$1001/ton on September 29.

By the time Hurricane Rita made landfall on September 24, many facilities had been shut down to accommodate the evacuation plans which were invoked when it appeared that Houston would be the target of the storm. Fortunately Hurricane Rita veered away to the east and although damage was reported to be light, the plant staffs were only allowed back into many, but not all, of the areas affected at the end of the last week in September. Exxon's n-paraffin production at Baytown was closed by the hurricane as were the LAB plants of Huntsman and Sasol's LAB and n-paraffin facility in Lake Charles, Louisiana. Huntsman declared force majeure on LAB (along with ethylene, EO and surfactants) with a 100 percent sales allocation on LAB. Huntsman had a cold shutdown on September 21 after orders were issued to evacuate the area. Start-up of the plant in Alvin, TX was underway in the last days of the month. The plant is part of a larger petrochemical complex operated by Solutia and depends on other parts of the facility to be up before the LAB plant can operate fully.

In the coming weeks, the plants are expected to return to normal operations. Power supplies are especially problematic as large numbers of customers along the Gulf are still without power. A major issue for the chemical industry in general has been the price increase of natural gas to over \$13/mm btu. Because the gas collection facilities along the Gulf Coast were shut, and particularly the Henry Hub, prices for gas spiked and it is not clear that they will return to more normal levels for the rest of the year. Since LAB is a large consumer of power and natural gas, these issues cast a pall over the price outlook for LAB in North America. Many chemical producers are looking at outages of 8-10 days, but hard hit areas in Louisiana may take until mid-October to

become fully functional.

The U.S. contract price for benzene was closed for September at the level of \$2.75/gallon (\$823/ton) while spot prices approached \$3/gallon at the end of the month. Expectations are that prices in the U.S. will continue to rise and \$3.12/gallon (\$934/ton) is one price mentioned for early October. In Europe, benzene prices in September were \$665/ton, contract, and a large increase to the \$895-\$910/ton level is being discussed for October.

Price moves in LAB were announced for the fourth quarter in the U.S. and were not consistent by the different producers. In early September, Huntsman announced a 4¢/lb increase to take effect October 1. This was post-Hurricane Katrina, but pre-Hurricane Rita. Near that time, Petresa lifted their 2¢/lb TVA until October 1. Neither of the two U.S. producers lifted their TVA's at that time. After Rita, the two U.S. makers decided to raise prices on October 1 by 10¢/lb with a 2¢ TVA for an 8¢/lb net increase. Petresa, however, moved differently, they raised net 4¢/lb with a 6¢/lb increase and a 2¢/lb TVA.

Producers are closely following the energy and kerosene situations. Since kerosene has recovered (see below) and not continued to remain high as seen during the last week of September, the TVA's are now unlikely to be removed.

In other regions, the effects of Rita and Katrina are less marked. For one thing, kerosene prices did not spike anything like the amount seen in the U.S. For that matter, prices in New York and California did not keep up with Gulf prices either. Whereas on September 29 the price on the Gulf reached \$1001/ton, Europe only reached \$690/ton and Singapore reached \$664/ton. By Tuesday, October 4, prices for Jet fuel were reported to exceed \$670/ton, fob in Europe, and \$648/ton in Singapore. In the US Gulf, the price of Jet Kero had fallen to \$2.07/gallon (\$685/ton). Production in Europe is being affected by a number of strikes in France that are interrupting production at various refineries there.

LAB prices in Latin America were reported to have increased \$88/ton (4¢/lb). In Europe, strong price resistance has been encountered and not all prices are finalized yet for the fourth quarter. It is expected that prices will increase somewhere between €20 to €60/ton and settle out in the neighborhood of €1080-1100/ton.

In Asia, price increases for the third quarter and reported here met with resistance and average pricing only reached the \$1150-1200/ton range. The third quarter price in China was RMB 9800/ton which, less the 17.5 percent VAT tax, comes to \$975/ton. Price increases for the fourth quarter are expected to leave the LAB market price in the range of \$1250-\$1260/ton in Asia. The Asia contract price is closer to but not up to \$1300/ton. Prices for n-paraffin are over \$800/ton and a price level of \$850/ton has been seen.

In the area of LABS acid, Stepan moved to raise its price by 8¢/lb on October 1.

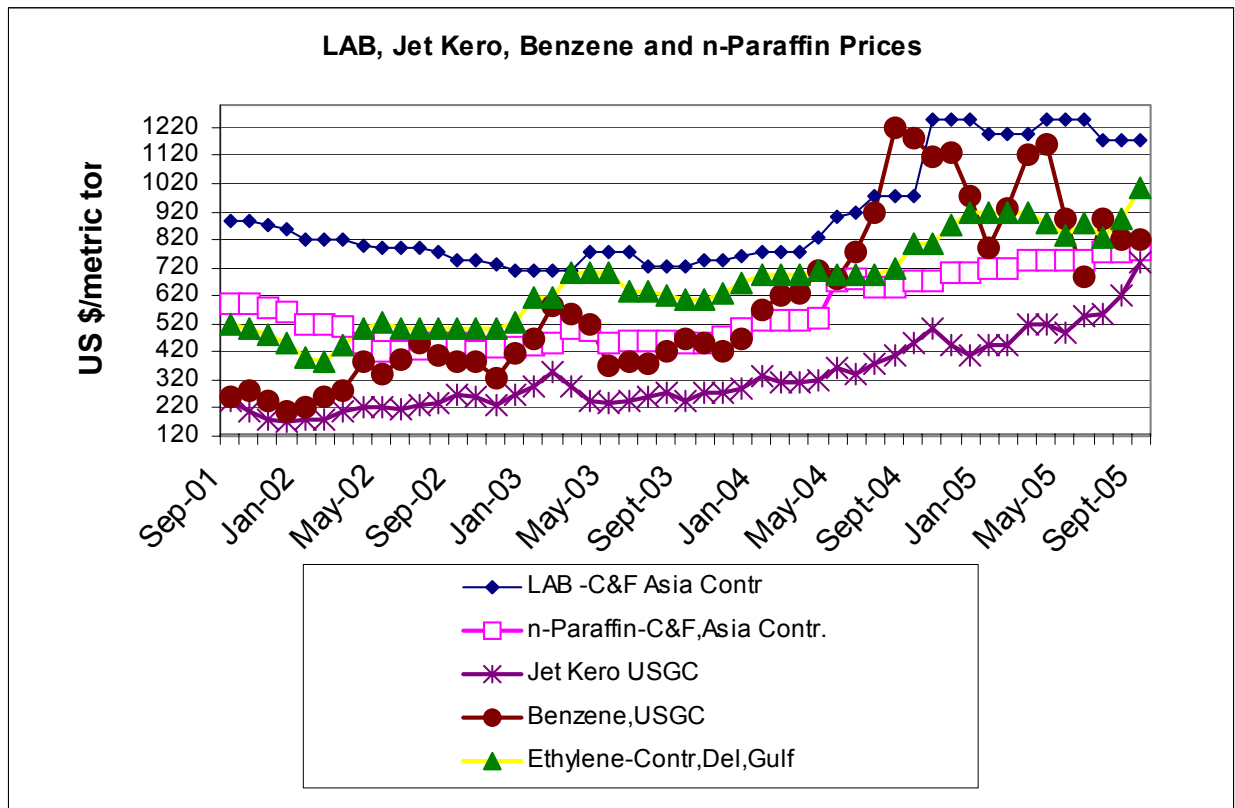
Dow and Shell had declared force majeure on nonionics after Hurricane Katrina. Dow has lifted their force majeure, but Shell struggles with feedstock supplies and has not recovered to 100 percent of supply. In fact, before Hurricane Rita hit, they had reached 60 percent but since there is even a stronger problem with the closure of Henry Hub and ethylene shortages, supply is thought here to have slipped lower.

Ethylene prices have seen strong increases. In late September, after spot prices had moved past 60¢ per lb, the contract prices reaching back to July were finalized. July rose one-half cent, August went up 3¢/lb and September went up 5¢/lb. A 10¢/lb increase for October is reported to be under discussion at some producers. Dow raised their EO prices 5¢/lb on September 15 and also announced another 10¢/lb increase to be implemented October 1.

Alcohol and AE prices have moved up some \$30-\$40/ton in Asia after a decline in the third quarter. Prices had fallen in the \$1350-1450/ton range, depending on location and other factors.

LAB AND FEEDSTOCK PRICING - FOURTH QUARTER 2005						
	North America		West Europe		Asia/Pacific	
LAB	67-76	¢/lb del	1080-1100	€/mt del		
	1477-1675	\$/mt del	1304-1328	\$/mt cfr	1250-1260	\$/mt cfr
Normal Paraffin					750-800	\$/mt cfr
	US Gulf Coast		Rotterdam		Singapore	
Jet-fuel kerosene (10/3/05 - DOE)	252.2	¢/gallon	203.15	¢/gallon	192.26	¢/gallon
	40.9	¢/lb	562.5	€/mt	523.3	€/mt
	902	\$/mt	677	\$/mt	640	\$/mt
	745.9	€/mt				

Currency Rates as of 10/3/05: \$1 = €0.83126 €1 = \$1.203
DOE = Department of Energy; del = delivered; cfr = cost & freight; Jet fuel = 7.88 bbl/ton



MARKET NEWS

SASOL O&S HURT BY WRITEDOWN - On September 12 Sasol reported that the company's operating profit for the fiscal year ended June 30, 2005 rose to R14.5 billion (\$2.3 billion). This was an increase of 56 percent over the previous year, while sales rose 15 percent to R69 billion (\$10.9 billion) compared to the year ago period.

The Olefins and Surfactants unit however recorded an operating loss of R221 million (\$35 million), which included a capital writedown of R783 million (\$124 million) from problems associated with an n-butanol plant at Sasolburg and LAB production in the U.S.

SASOL PORTO TORRES IDLE - In the August 10, 2005 issue of Chemweek, Sasol's idle LAB plant in Porto Torres, Italy was cited to have restarted due to improvements in demand. Further discussions with Sasol has revealed, however, that while the plant has operated at times in the past since it was officially idled and can still produce on short notice, at the present moment it remains idle.

HONEYWELL TO BUYOUT DOW'S UOP STAKE - Honeywell announced that it has entered a definitive agreement to acquire the 50 percent interest in UOP LLC owned by Union Carbide, a wholly owned subsidiary of Dow Chemical Company. This move would give Honeywell full ownership of UOP. The transaction, subject to regulatory approval, is expected to close in the fourth quarter of 2005. Honeywell will pay \$825 million for Dow's stake in UOP, with an adjustment for cash and outstanding debt in the venture at closing. UOP's technologies are mainly used in oil-derived products and chemicals, as well as the manufacture of plastics, detergents and fibers. UOP also produces catalysts, alumina absorbents used to purify gas and molecular sieves used to dry air. Roughly half of the world's biodegradable detergents are produced with UOP technologies.

JING TUNG UNIT TWO RESTARTED - Jin Tung's second LAB unit at Nanjing has recently resumed operations in September. The plant, which has a capacity of 100,000

tons per year, is believed to have stopped operating in July of this year.

UIC COMPLETES DEBOTTLENECK - PT Unggal Indah (UIC) has completed the process of debottlenecking their operation at Merak and restarted successfully. Total alkylate output of the LAB/BAB swing plant can now reach up to 270,000 tons per year, with LAB capacity reaching up to 180,000 tons per year.

BISOTUN RESOLVES ISSUES - Iran based Bisotun has apparently resolved technical issues within the alkylation unit rumored to have delayed start-up. The operating came on-stream in early September and has an LAB capacity of 50,000 tons per year.

TRINIDAD APPROVES GTL PLANT - The Trinidad and Tobago government announced on September 15 that it has approved a \$100 million GTL plant that would ensure the production of efficient environmentally friendly fuels for local consumption. The plant will be jointly owned by the state-run company Petrotrin and U.S. based World GTL Limited.

SHELL TO AWARD PROJECT MANAGEMENT CONTRACT FOR PEARL - KBR, the engineering, construction, and services arm of Halliburton, and Japan based JGC corporation together announced on September 22 that Qatar Shell Limited, a Royal Dutch/Shell subsidiary, has executed a letter of intent to award the project management contract for the Pearl GTL project to a joint venture between the two companies.

SULFONATOR NEWS

ROKITA IS ADDING A NEW SULFONATION PLANT - Rokita (Poland) has contracted for a new sulfonation plant to be built by Ballestra. This new plant is expected to have capacity of 2 tons per hour and to be onstream in mid-2006.

FEATURE STORY: EAST EUROPE LAB

This profile defines the western boundary of East Europe as the western borders of Poland, the Czech Republic, Slovakia, Hungary, and Slovenia. It includes Turkey, Russia, and all countries of the former U.S.S.R. as part of the East Europe region.

LAB Supply

Russia - East Europe's main LAB producer is Kinef (KirishiNefteOrgSintez), located in Kirishi, a fairly large oil refining city about 100 km southeast of St. Petersburg. Kinef's nameplate capacity is 50,000 tons per year, but can produce as much as 60,000 tons. The operation is thought to have been producing at high rates for the last several years. Kinef produces LAB from captive normal paraffins, for which it has an estimated capacity of 120,000 tons per year. Kinef is 99 percent owned by Surgutneftegaz, Russia's third-largest oil company. Kirishi also operates sulfonation capacity and supplies only LABS to the local market.

Nizhnekamskneftekhim has announced plans for a 30,000 to 40,000 ton per year Ballestra LAB plant, which is to be based on C₁₀, C₁₂, and some C₁₄ alpha-olefins. Currently the project is reported on hold as the company reorients its strategic goals. Nizhnekamskneftekhim Inc. is a key petrochemical producer in Russia with 10 major plants and products that include monomers, synthetic rubber, EO, PO, alpha olefins, polystyrene, and surfactants. The company's main base of operation is the petrochemical complex in Nizhnekamsk, Russia, some 500 miles north of the Caspian Sea.

EAST EUROPE LAB PRODUCERS AND CAPACITIES, 2003-2004 (thousand tons)			
Producer	Location	2003	2004
Kinef	Kirishi, Russia	50	50
TOTAL		50	50

LAB Demand

The region had an estimated LAB demand of 174,000 tons in 2004, an increase of 6.7 percent from the previous year.

The Russian economy continued to outpace the other countries in the region in 2004 on the strength of export income as a result of high oil prices. The country's GDP grew an estimated 7 percent in 2004, consistent with the yearly pace it has established since the 1998 Asian financial crisis. This has translated into detergent growth at nearly double the rate of the rest of the East European Bloc. Turkey, which is the largest LAB consuming country in the East European region, only maintained the level of LAB consumption from the previous year, despite a bustling 9.8 percent GDP growth in 2004.

Higher oil prices have also had other, less desirable effects in the marketplace. Detergent producers in the region have fairly little price latitude. Since consumers in the region are very price sensitive, the soapers' response to the increase in oil prices have been a general decrease in the level of surfactants in formulations. By some estimates, the level of actives in formulations in the region has declined as much as 2 to 3 percent in 2004.

Lanitex Optima LLC's 25,000 ton per year sulfonation operation under construction in St. Petersburg is set for completion by the end of this year. However, legal and administrative approval requirements may set the startup date back to sometime in early 2006. DEKA'S planned detergent complex in Tirania, Albania which will include a sulfonator with an estimated capacity of 16,000 tons per year has also experienced a number of delays and it is unclear when the complex will be completed. The original completion date was to be by the end of 2004.

LAB Supply/Demand Balance

The majority of the region's increase in LAB demand was supplied through an increase in ex-regional imports.

Production for Russia's Kinef operation, the region's sole remaining LAB producer for 2004, totaled 55,000 tons in 2004, for an overall operating rate of 110 percent.

The LAB trade picture continues to be obscured by imports of LABS acid and finished detergents. Turkey is a major supplier of acid to its northern neighbors and acid still moves from West Europe into the region.

EAST EUROPE SUPPLY/DEMAND BALANCE, 2003-2004 (thousand tons)		
	2003	2004
LAB Demand	163	174
Exports (Ex-Regional)	13	12
Imports (Ex-Regional)	121	131
Net Imports	108	119
LAB Production	55	55
LAB Capacity	50	50
Operating Rate (%)	110%	110%

Outlook

The Russian economy is rapidly developing a middle class which no longer has the time or the inclination to handwash its laundry. Washing machine sales have become strong in recent years. While it is still unclear whether front or top loading washing machines will become the standard in the Russian market, a shift to automatic powders is already underway.

Leverage by traditional LAB suppliers to East Europe is set to decline as new producers in the Middle East and Asia prepare to move in on the region. Of particular concern is the Turkish market, where pressure from the incoming supply expansion of the aforementioned ex-regional markets is most likely to be felt.

Private labels do not play a large role in the region, as multinational soapers and larger regional players maintain a fairly strong position in the market place.

FEATURE STORY: METHYL ESTER SULFONATES REVIEW

Introduction

As prices of petroleum have soared in 2005, interest in methyl ester sulfonates (MES) has increased sharply, especially in Asia. Lion, the Japanese detergent producer, has received strong interest in their process to make an MES powder which has been improved to provide a low cost, high quality product. A semi-commercial unit has been operated which has given Lion samples of MES powder and encouraged the company to pursue the construction of at least one 100,000 ton MES plant in Asia. A site for the unit has not yet been announced and Lion still faces a number of hurdles to reach commercialization.

There is a major MES unit operated by Huish Detergents in the U.S. in Houston, TX. This plant, which utilizes a different process offered by Chemithon, has been running for several years since commencing operations in 2001-2002. It also produces a dry MES that is used in the production of liquid and powder detergents in the U.S.

The appeal of MES is based on the perception of a low production cost, the renewable raw material it is based on, excellent biodegradability, better insensitivity to calcium ions than LABS, and good detergency.

Chemical Aspects of Manufacture

Two areas of MES production have limited the practicality of use in detergents: the inadvertent production of a di-salt, and the presence of color bodies post sulfonation which have had a negative effect on detergent powder qualities. Di-salt levels in the early 1980s in C₁₆₋₁₈ MES were found in the range of 10 percent. These di-salts were not of themselves a problem, they provide some builder properties, but have widely been regarded as diluents to a formulation. Over time, producers such as Lion have learned to reduce the di-salt and color bodies in final MES products and a di-salt level of about 5 percent has been regarded acceptable.

Regarding the color bodies and color of MES, when Le Chat[®] in France used MES in the early 1980s, the powder was a beige color. Consumers were told this was due to using natural-based MES and accepted it. Otherwise, the color of Le Chat[®] would never

have been regarded as acceptable. The trial product of MES powder from Lion is described as a "light yellow". This color level could still make a reasonable detergent, but it is not as good as a sample of C₁₆ MES received from Chemithon which scored 18 on a 5 percent active Klett. A key reason for such good color from the C₁₆ MES sample is the lack of unsaturates.

Higher levels of unsaturates in the sulfonation precursors (for MES, the methyl esters) lead to poorer colors in the sulfonate, not only in MES but other surfactants, such as LABS. The unsaturated sites in the precursors (methyl esters or LAB) also react with SO₃, leading to darkening and discoloration.

Washing Performance

During the 1990s, Lion has presented various papers on the desirability and utility of MES. Papers presented at the Montreux Detergents Congress indicated the utility of blending MES with LAS to improve performance.

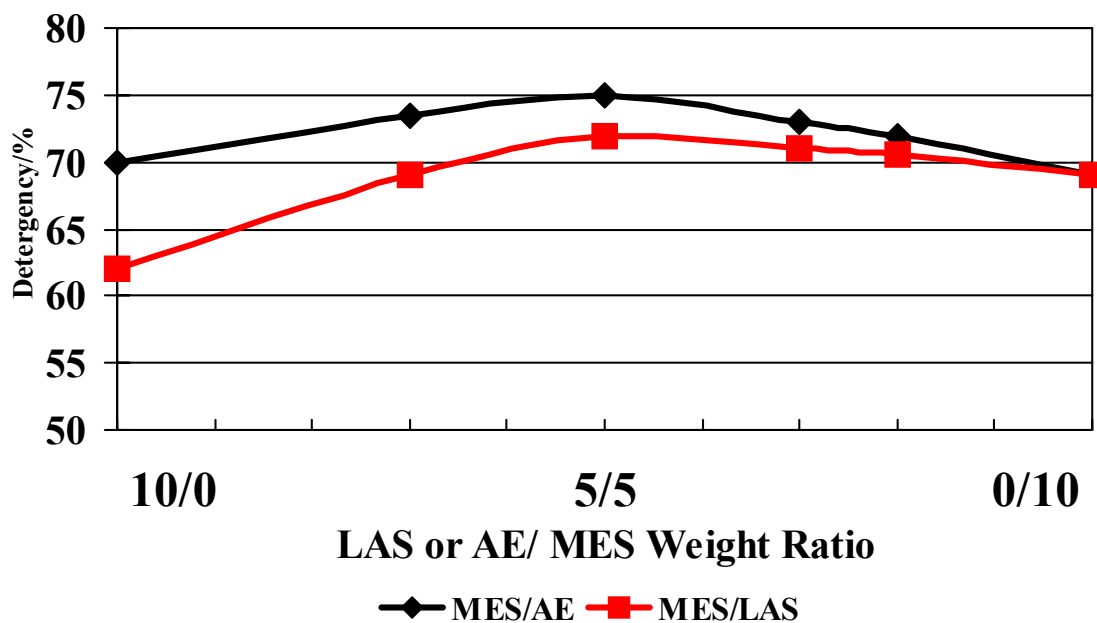
In the January 2001 issue of this newsletter, we reported the following points regarding MES: "The performance properties of MES surfactants were described in a paper by T. Satsuki of the Lion Corporation at the 3rd World Conference on Detergents in Montreux, Switzerland in 1993. The effect of MES carbon chain length on detergency was measured at 25EC and 40EC under low and high water hardness conditions, showing that the C₁₆₋₁₈ species performed the best."

Compared to other common surfactants, it was also shown that MES performed better than linear alkylbenzene sulfonate (LABS) and alcohol sulfate (AS) in water at 25EC and 54 ppm hardness (expressed as CaCO₃). In concentrated detergent formulations typically used in Japan, it was shown that an MES-based product with 20-25 percent MES performed as well as one with 30-40 percent LABS, and that mixtures of MES with LABS gave better performance than combinations of LABS with either AOS (alpha-olefin sulfonate) or AS. In a later paper, given at Montreux in 1998, T. Takahashi presented further information regarding MES/LABS mixtures at 15EC and 54 ppm hardness that suggested a 50:50 blend of MES and LABS exhibited better detergency than either MES or LABS alone.

In a recent poster paper in Japan by Miyame, Hagiwara, Okuma and Hama of Lion, various diagrams pointed out features of Lion's current MES product. The following diagram indicates a "synergy" effect of blending MES with either AE or LABS. (A copy of

a poster paper presented at the conference is attached to the CAHA website for further study.) It is interesting that a 50:50 blend of LAS and MES is shown to perform nearly as well as a 80:20 blend of MES and AE in a Terg-O-Tometer study. An important issue for measuring MES performance is the washing conditions. Water temperature can be an issue for the higher chain length material. In Japan, where Lion uses MES in detergents, there is some C₁₄ used to provide better cold water performance. In the U.S., the producer Huish prefers to use a C₁₆ material. Lion is proposing to offer the merchant market a C_{16/18} blended product.

SYNERGY EFFECT OF MES FOR DETERGENCY



Conditions: Terg-O-Tometer 120rpm 10min., 15°C, 3°DH, Artificial soiled cotton swatch, Surfactant 167ppm, Sodium Carbonate 200ppm, Zeolite 167ppm

In the same paper where the above figure appeared, a secondary benefit of MES use is suggested. This benefit is that protease enzymes are more stable in single surfactant systems than LABS or AS. This is something of a non-sequitor for powder

detergents, but if liquid MES-based detergents ever become an important factor, enzyme stability might increase in relevance.

Processability

In the 1980s, before compact detergents came into the market, formulators looking to use MES had a problem in manufacture from the hydrolysis of MES in the high pH environment of the crutcher slurry prior to spray drying. With the increased use of agglomeration in the post-compact world, many producers are now equipped and theoretically ready to insert a dry MES powder into their detergent production program. In many countries, smaller detergent makers may not be prepared to easily modify their plants to do so. Using MES in a detergent powder is not a direct plug-in replacement for LABS.

The Lion powder MES is being offered in a range of C₁₆₋₁₈ chain lengths. The content of MES in the powder is 77-81 percent MES as between eight and ten percent zeolite is added to improve flowability and other handling properties. The addition of these levels of zeolite to the MES suggests that the MES could be hygroscopic.

With powder MES due to become available on the market in approximately the next two years, the question remains whether it can be directly added to detergents in a post addition step or whether it will be necessary to first process it into a separate detergent granule with the appropriate density and mesh size for a detergent. The Lion spec claims a 0.5-0.7 density range with a mean particle size of 400-600 microns. The powder may be suitable for many producers but the need to incorporate MES in a granule is considered for a few reasons. Such a granule would preferably include an ingredient which would also enhance the wetting and dissolution of the powder MES. A concern is that each customer may require a customized granule that will work in their system. Many large detergent producers could easily achieve this end, but might not appreciate the necessity of adding a new process step to their detergent line. A granulization step would need to be flexible enough to be adjusted on the fly to the different brands in a producer's portfolio. This would assume that granulization would not fall under patents which restrict the optimal systems for making an MES granule. Small detergent makers could have difficulty achieving adequate properties for granules and could have difficulty absorbing an extra cost. In many cases, it is easy to imagine that a granulization step for the MES would be overlooked and powdered MES be dry mixed into a powder. Ideally,

customers would prefer to purchase granules from an MES supplier but the need for customization of the MES granule to a specific customer's product could become expensive and defeat the economic benefit of using MES.

Intellectual Property

By 1992, Lion held most of the 230 patents on MES in Japan. Huish has patented the use of C₁₆ methyl esters in detergents. For Lion, the means to control the investment in MES IP development is to build and operate the plants to make MES. Any plant offshore raises issues of how to control the intellectual property associated with the production of MES, from binding the operators to Lion to ensuring that local partners see the advantages of preventing the know-how of MES manufacture to be siphoned off. Chemithon has a process that can be licensed and they are eager to build new plants. It is surprising that since the Huish unit, no other detergent makers have made a commitment to produce MES. This lack of further investment in the Chemithon process speaks mountains about the acceptability of their technology. We do not profess to know all of the details surrounding this reticence.

There have been some MES plants sold to the market. One went to a company in Central America which has since become part of Lever. The plant was never erected and is said to have been shipped to India. Another facility is that of the Chengdu Nymph company, a supplier/ partner of P&G in China. These plants are at least 5 years old and to our knowledge have never produced commercial quantities of MES.

Customers

With the commitment to own and operate MES plants for the merchant market, a quandary develops for Lion to sell strategically and not to major competitors. What customer base is left? Henkel does not compete in Lion's detergent markets and would be a primary sales target. There are also Chinese and Indian detergent producers that would be interested. It would appear that Lion should be able to fill up at least one plant for MES. And if there were ever conditions to motivate 10 different detergent customers to make a simultaneous decision to take on a new surfactant in a manufacturing program, today's conditions would have to be it.

Capital

For Lion, a key consideration is to find a partner that could provide a good source of palm products and presumably have interest in funding much of the plant investment. It would seem an easy task to find a plantation company in Malaysia, Thailand or Indonesia that could be convinced that this is a good place to invest \$50-100 million. Palm producers have been keen to find ways to raise the price of palm oil or upgrade the value of palm-based products. Although producers continue to make good money, they remain distressed by the discount by which palm sells against soya oil. Perhaps palm producers are becoming confused by the number of potential areas to invest in, now that the world of biodiesel appears to be opening up to them.

Production Schemes

There are three commercial producers of MES today: Stepan, Lion and Huish. Stepan was a pioneer in the production of MES, carrying out work in the early 1950s. In the mid-1980s, Stepan made a push to commercialize MES for use in liquid systems. Stepan has preferred the use of a C₁₄ range MES as it has good cold wash performance. Also, by avoiding unsaturates, color problems were minimized. In the late 1990s, MES from Stepan turned up in an anti-bacterial hand wash from Lever. More recently, Stepan has found success in placing MES in toilet soap bars.

Lion commercialized C₁₆₋₁₈ MES in Japan in the late 1980s and is currently to move forward with a plan to build a large new facility which will employ a new process.

Huish started a plant in Texas in 2001 to make captive MES for detergents. Huish has taken the approach to fractionate out C₁₈ from the feed and send that over for sales to biodiesel. This tactic eliminates issues associated with the presence of unsaturates without any hydrogenation. Will others be able to use this? Given the potential to make C₁₈ biodiesel and C₁₆ MES, one would think that this approach would be attractive.

Cost

A cost comparison of MES and LABS which appeared in the June 2004 journal SOFW is shown below. The article was authored by Norman Foster of Chemithon. The following table appeared in the article and indicates approximately a \$200/ton cost advantage for manufacturing MES. This advantage is based almost entirely on a

\$300/ton cost advantage of methyl ester over LAB at the time. By costing the sulfonation process alone, Foster does not deal with the cost of an esterification unit which might cost up to \$60 million for 100,000 tons. This seemingly high cost, compared to those built for bio-diesel purposes should produce an extremely high quality ester in order to achieve high quality MES.

Given that palm stearin now sells in Malaysia for about \$350/ton today compared to \$485/ton in 2004 when the article was written, palm stearin or tallow should still be able to convert to a methyl ester value of just over \$500 per ton as reported in the SOFW article despite the fall of glycerine by-product values. Since the price for LAB in Asia now about \$1250/ton vs. the \$1000/ton level quoted in last year's article, it would appear that the MES cost advantage has expanded to as much as \$400/ton over LABS.

MANUFACTURING COST COMPARISON OF MES AND LABS					
	\$/MT	MES		LABS	
		T/T	\$/T	T/T	\$/T
RAW MATERIALS					
Sulfur	110	0.110	12.10	0.102	11.22
LAB	1000	--	--	0.721	721.00
ME	521	0.775	403.78	--	--
NaOH	176	0.191	33.62	0.132	23.18
MeOH	192	0.080	15.36	--	--
H ₂ O ₂	750	0.060	45.00	--	--
Na ₂ SO ₄	100	0.020	2.0	--	--
N ₂	75	0.035	2.63	--	--
Total Raw Materials			514.49		755.40
UTILITIES					
Electricity	\$102/MWH	0.209 MWH	21.35	0.180 MWH	18.36
Steam	8.70/MT	2.05 T	17.83	0.140	1.22
Cooling Water	21.74/KT	0.055 KT	1.20	0.055 KT	1.20
Total Utilities			40.38		20.78
Operating Labor			12.00		12.00
Maintenance			10.65		10.65
General OH (50% Op Cost)			6.63		6.63
Tax & Insurance (1% Capital)			1.96		0.88
Operations Costs		31.25		30.16	
TOTAL COST/MT (\$)			586.11		806.29
Source: SOFW Journal, 6/04. Author: N. C. Foster					

Outlook

The answer to whether or not MES succeeds relies on the petroleum outlook. If there is not a recovery of prices to a level below \$50/bbl, then MES will hold the incentive to widespread development. Lion continues in discussions with potential partners for a large new plant in Southeast Asia. A mystery at this stage is that with a process commercially freely available, why no other producer has committed to a Chemithon unit.

One answer is the trend to liquid detergents in many markets. Another reason probably lies with the fact that Huish had a difficult time getting their MES plant to a fully operational stage. However with high petroleum prices pushing greater interest in methyl esters for biodiesel, it would seem only a matter of time before some others commit to MES projects. With Lion pioneering in the commercial market, it will give others confidence to explore their own schemes. LAB producers must raise this to a higher threat level on their list of challenges that the current petroleum scene is supplying.