Higher performance.
Higher yields.

Capture more value with our lubes base stock technology.

ExxonMobil’s MSDW™, MAXSAT™ and MWI™ catalyst technologies produce high quality, high performing lubes base stocks. These technologies incorporate proprietary ExxonMobil catalysts and deliver outstanding activity, yield, selectivity, run length and durability. Our MSDW catalyst has demonstrated this for nearly 20 years. Our MAXSAT and MWI catalysts also deliver benefit-rich performance.

**Selective catalytic dewaxing**

- **Wax Molecule**
  - ~180 VI; +35ºC pour pt
- **Isoparaffin Molecule**
  - ~150 VI; -18ºC pour pt
- **Bulky Oil Molecule**
  - ~100 VI; -18ºC pour pt
- **Unchanged Bulky Oil Molecule**
  - ~100 VI; -18ºC pour pt

**Stop**
**Go**

**Key benefits**
- **High performance**
  - Increased yields
  - Improved selectivity
  - Higher activity
  - Long life
- **Low risk**
  - Proven performance
  - Simple fixed-bed operation
  - Tolerant to feed upsets
- **Exceptional product quality**
  - API Group II, II+, III, and III+ classification
  - Outstanding low-temperature performance
  - High oxidation stability
  - Low and high vis grades

**Performance evolution**
The need for improved lube base stock quality and performance has been largely influenced by two significant trends in the automotive and transportation industry. The first is the quest for higher fuel economy and lower overall emissions. The second is the emergence in the mid-1990s of more advanced hydrotreatment routes to the production of lubricant base stocks to help deliver improved performance in engine oil applications.
Catalytic dewaxing technology

At the heart of the process is a system of proprietary shape-selective catalysts containing zeolites and small amounts of noble metals. They are specifically designed to isomerize n-paraffins and saturate aromatics with maximum selectivity to lubes and minimal cracking to fuels. These catalysts display superior activity and unsurpassed tolerance to nitrogen, sulfur, and aromatic contaminants in the feed. Even degradation in feed quality, which might irreversibly poison other catalysts, will require only a temporary increase in operating temperature with minimal impact on aging and virtually no impact on product yield.

Increase profits and add flexibility

To put the true value of the yield advantage of the MSDW® catalyst system in context, consider this: for an average MSDW unit, at current product prices, a difference of 1% in yield of base stock product is worth between $2 million and $4 million per year over each used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.

In today’s world, standing still corresponds to stepping backward. At ExxonMobil we have active R&D to continue to boost yield, further improve tolerance to heteroatom contaminants, and broaden the range of acceptable feedstocks. We are now on our third generation of the MSDW catalyst system, with better activity, selectivity, and polar tolerance than the original catalyst we used in our first deployment in 1997.

**Value of 1% yield:**
- 10,000 BPD unit (average size)
- At recent prices*
  - $2-4 million/year vs. ULSD
  - $7-8 million/year vs. revenues
- Group–II $1,350/MT
- Group–III $1,700/MT
- ULSD $1,000/MT

**MSDW, MAXSAT™ and MWI™ services include:**
- Initial non-confidential consultations
- Development of licensing proposal
- Basic engineering package, including basic design specification and operating guide
- Engineering support during FEED and EPC stages
- Technology transfer, training, catalyst loading and start-up support
- Performance estimates for catalyst refills

**About us**

ExxonMobil helps refiners and petrochemical manufacturers increase capacity, lower costs, improve margins, reduce emissions and operate safe, reliable and efficient facilities. Along with a commitment to helping to implement best practices and to achieve better results, we provide cutting-edge proprietary catalysts and license advantaged process technologies for refining, gas and chemical needs.

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