

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

INFINEUM USA L.P.,
Appellant

v.

CHEVRON ORONITE COMPANY LLC,
Appellee

**KATHERINE K. VIDAL, UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY
AND DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE,**
Intervenor

2020-1333

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2018-
00922.

Decided: August 8, 2022

CHRISTOPHER STRATE, Gibbons P.C., Newark, NJ, for
appellant. Also represented by DAVID E. DE LORENZI,
SAMUEL H. MEGERDITCHIAN.

2 INFINEUM USA L.P. v. CHEVRON ORONITE COMPANY LLC

NAVEEN MODI, Paul Hastings LLP, Washington, DC, for appellee. Also represented by STEPHEN BLAKE KINNAIRD, IGOR VICTOR TIMOFEYEV, DANIEL ZEILBERGER; SCOTT FREDERICK PEACHMAN, New York, NY.

DANIEL KAZHDAN, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for intervenor. Also represented by MARY L. KELLY, THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED.

Before TARANTO and STOLL, *Circuit Judges*.*

STOLL, *Circuit Judge*.

Infineum USA L.P. appeals from the final written decision of the Patent Trial and Appeal Board holding claims 1–20 of U.S. Patent No. 6,723,685 unpatentable under 35 U.S.C. § 103. The '685 patent claims cover lubricating oil compositions and their use in internal combustion engines.

Besides raising challenges to the merits of the Board's decision, Infineum presents a challenge under the Appointments Clause of the Constitution, Art. II, § 2. Following the Supreme Court's decision in *United States v. Arthrex, Inc.*, 141 S. Ct. 1970 (2021), we remanded this matter, while retaining jurisdiction, to give the Director of the U.S. Patent and Trademark Office the opportunity to consider reviewing the Board decision. The Director declined, and Infineum has not challenged the Director's denial of review. We therefore proceed to address Infineum's

* Circuit Judge O'Malley, who served on the merits panel in this case, retired on March 11, 2022. Judges Taranto and Stoll have acted as a quorum with respect to this opinion. See 28 U.S.C. § 46(d); see also *Yovino v. Rizo*, 139 S. Ct. 706, 709 (2019).

challenges to the merits of the Board decision. Because substantial evidence supports the Board's determination of obviousness, we affirm.

BACKGROUND

Lubricating oil compositions for internal combustion engines comprise a base oil (or mixture of base oils) of lubricating viscosity and additives used to improve the performance characteristics of the base oil. Base oils are comprised of basestocks classified by the American Petroleum Institute (API) in Groups I–V. Additive components are generally known by their structure and properties and may be used to inhibit corrosion and to reduce engine wear, oil consumption, and friction loss.

Industry standards, such as those set by the International Lubricant Standardization and Approval Committee (ILSAC), set requirements for certain properties, ingredients, and performance of base oils. The ILSAC GF-3 standard, in effect as of the filing date of the '685 patent, set a maximum engine oil volatility of 15%.¹ A higher viscosity index (VI)² reduces base oil and finished oil volatility. The base oil is the primary influence on a finished engine oil's volatility. High VI is a feature of premium, high-quality base oils. Though the GF-3 standard does not recite any particular VI threshold, it was understood that commercially available base oils would need to have a VI of at least 95 for the engine oil to comply with the maximum Noack volatility requirement of 15%. *See* J.A. 1835, 1847

¹ The GF-3 standard measures volatility using an industry-standard Noack volatility test, which measures the evaporative loss of lubricant oil at a high temperature.

² VI is a measure of base oil viscosity that indicates an oil's change in viscosity with variations in temperature. A high-VI oil exhibits significantly lower changes in viscosity over the temperature range of use than a low-VI oil.

Fig. 1, 2285–86. At the time of the '685 patent's filing, the industry was using base oils in Groups III and IV and certain base oils in Group II in developing engine oils that would meet the GF-3 standard. *See* J.A. 566.

Traditionally, anti-wear additive components contained phosphorous. The GF-3 standard set a limit on the phosphorous content of engine oils. Seeking to reduce phosphorous content in additive components, formulators turned to solutions such as oil-soluble molybdenum compounds and organic friction modifiers to control wear and reduce friction.

The '685 patent, titled "Lubricating Oil Composition," was filed on April 5, 2002, and sought "to find a lubricating oil composition that provides improved fuel economy benefit[,] demonstrates excellent wear protection characteristics, is relatively low in cost, and is free of nitrogen-containing friction modifiers." '685 patent col. 1 ll. 63–67.

Claim 1 is the sole independent claim of the '685 patent:

1. A lubricating oil composition comprising:
 - a) an oil of lubricating viscosity having a viscosity index of at least 95;
 - b) at least one calcium detergent;
 - c) at least one oil soluble molybdenum compound;
 - d) at least one organic ashless nitrogen-free friction modifier; and
 - e) at least one metal dihydrocarbyl dithiophosphate compound, wherein said composition is substantially free of ashless aminic friction modifiers, has a Noack volatility of about 15 wt. % or less, from about 0.05 to 0.6 wt. % calcium from the calcium

detergent, molybdenum in an amount of from about 10 ppm to about 350 ppm from the molybdenum compound, and phosphorus from the metal dihydrocarbyl dithiophosphate compound in an amount up to about 0.1 wt. %.

Id. at col. 13 ll. 47–62.

Chevron Oronite Co. filed a petition for inter partes review challenging all claims of the '685 patent as obvious under 35 U.S.C. § 103 over primary reference Toshikazu³ in view of Henderson.⁴

Toshikazu is a published Japanese patent application titled “Lubricating Oil Composition for Internal Combustion Engines” that discloses formulations having “excellent wear resistance and friction characteristics.” Toshikazu ¶ 55. Toshikazu’s Examples 1–19 are inventive lubricating oil formulations, most of which contain varying amounts of each of the additive components claimed in the '685 patent. Toshikazu Tables 1–2.

Henderson is a technical paper published in 1998 and discusses the changing requirements for engine oils as of that time. Henderson describes an industry shift toward higher-viscosity, lower-volatility base oils and discusses the then-upcoming GF-3 standard, its requirements, and its expected performance improvements to engine oils.

³ Japanese Pub. Pat. App. No. JP H5-279686 A (published Oct. 26, 1993). We cite to the same certified English-language translation of Toshikazu relied on by the Board. See J.A. 542–52.

⁴ H.E. Henderson, et al., *Higher Quality Base Oils for Tomorrow’s Engine Oil Performance Categories 1–10* (SAE Tech. Paper Series, No. 982582, 1998).

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