

PEMULEN™ TR-1 NF POLYMER

Pemulen™ TR-1 NF polymer meets the limits cited in the current edition of the following monograph:

- United States Pharmacopeia/National Formulary (USP/NF) monograph for Carbomer Copolymer Type B

General Product Characteristics

Appearance: White, fluffy powder
 Odor: Slightly acetic

Test	Specification	Lot Test Frequency ¹	Test Procedure ²
Identification Infrared spectrum Foam on dispersion test	Pass Pass	--- ³ 1:1	Lubrizol SA-102 USP/NF
Carboxylic Acid Content, Assay %	52.0 - 62.0	1:1	Lubrizol 1318-A
Viscosity, cP, 25°C Brookfield RVT, 20 rpm, neutralized to pH 7.3 - 7.8 0.2 wt% emulsion, spindle #5 1.0 wt% mucilage, spindle #6	 6,500 - 15,500 14,000 - 26,500	 1:1 1:1	 Lubrizol SA-015 Lubrizol 430-I
Emulsion Stability Test	Pass	1:1	Lubrizol SA-015
Loss on Drying, %	2.0 max	1:1	USP/NF
Residual Solvent⁴ Ethyl acetate, % Cyclohexane, %	0.30 max 0.30 max	1:1 1:1	Lubrizol SA-009 Lubrizol SA-009
Benzene⁵ Benzene, ppm	0.50 max	1:1	Lubrizol SA-064
Residual Monomer, ppm Free acrylic acid	2,500 max	1:1	Lubrizol SA-005

¹ Where lot test frequency is less than 1:1, Lubrizol Advanced Materials, Inc. certifies that each batch/lot meets requirements for the characteristics based on historical process and product data. Because these characteristics are tested on a skip-lot test frequency, results are not reported on the Certificate of Analysis.

² Lubrizol test procedures have been cross-validated to specified compendial procedure(s) or validated if they are included in the monograph.

³ Infrared reference spectra available upon request.

⁴ No other residual solvents as listed in USP/NF <467> (Class 1, 2, 3, Table 4 or any other solvents) or Ph. Eur. 2.4.24 are used in the manufacturing process of this product.

⁵ Benzene is tested due to it being a potential impurity.

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