

Revised date on Apr. 1st 2020

Soarnol™ A4412

ETHYLENE VINYL ALCOHOL COPOLYMER (EVOH)

44 mol% Ethylene Content

Application

Soarnol™ A4412 is one of the standard grades of Soarnol™, its ethylene content is 44 mol% with a high MFR (melt flow rate). Soarnol™ A4412 has excellent water resistance and good gas barrier property, especially in high humidity environments. Its gas barrier property is not drastically lower at high humidity. This resin is primarily used in co-extruded cast film, tube and co-extrusion coating applications.

General Properties

Properties	Unit	Value
Ethylene Content	mol%	44
MFR ¹⁾ (210 degree C, 2160g)	g/10min	12
Volatile Matter	%	< 0.3
Melting Point ²⁾	degree C	164
Crystallization Temp. ²⁾	degree C	144
Glass Transition Temp. ²⁾	degree C	55
Density ³⁾ (23 degree C)	g/cm ³	1.14
Oxygen Permeability ⁴⁾ (20 degree C x 65%RH)	cc.20μm / m ² .day.atm cc.mil / 100inch ² .day.atm	1.5 0.076

1): Measured with Melt Indexer

2): Measured with DSC, both heating and cooling speeds of 10 degree C/min

3): Measured with Micromeritics Gas Pycnometer

4): Measured with OXTRAN 2/20 (MOCON)

*The above figures are representative values and are not guaranteed.

Melt Viscosity

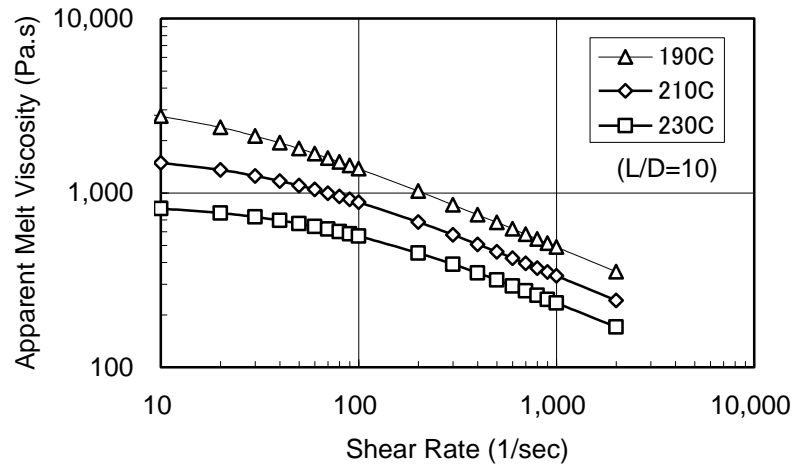


Fig. 1 Melt Viscosity of Soarnol™ A4412

Example of Processing

Extruder : 40 mmφ L/D = 28
 Screw : full flight, constant pitch type, C.R. = 3.5
 Screen pack : 90/90 mesh

Processing Temperature

	C ₁	C ₂	C ₃	C ₄	C ₅	AD
deg.C	170-200	185-210	200-230	200-230	200-230	200-230
deg.F	338-392	365-410	392-446	392-446	392-446	392-446

Revised date on Apr. 1st 2020

Quality and Safety for Application of Soarnol™ A4412

High quality Soarnol™ is produced by Okayama plant in Japan, NOLTEX L.L.C. in U.S.A. and NIPPON GOHSEI UK Ltd. in U.K.. All plants are certified to meet the requirement of ISO 9001.

Soarnol™ contains no heavy metals or other harmful substances. Soarnol™ meets the Food Sanitation Standards of various countries.

Please contact us to inquire about food product hygiene for the various Soarnol™ brands or for food hygiene conformity in other countries.

U.S.A : US FDA 21, C.F.R. §177.1360

JAPAN : Ministry of Health and Welfare Announcement No.370(1959) and Its Latest Amendment No.18(1994)

Voluntary Standards for Food Contact Substances and Polymers (JHOSPA)

EU : Commission Regulation (EU)No. 10/2011 and its amendments

CHINA : GB9685, GB4806.6 and their amendments

Soarnol™ Contacts

Soarus L.L.C.	3930 Ventura Drive, Suite 300, Arlington Heights, IL 60004, USA TEL +1-847-255-1211 FAX +1-847-255-4343
Mitsubishi Chemical Corporation Head Quarters	1-1, Marunouchi 1-Chome, Chiyoda-Ku, Tokyo 100-8251, Japan TEL +81-3-6748-7803 FAX +81-3-3286-1239
NIPPON GOHSEI Europe GmbH	Merowingerplatz 1a, D-40225, Duesseldorf, Germany, Life Science Center TEL +49-211-385488-0 FAX +49-211-385488-29
Mitsubishi Chemical (China) Co.,Ltd.	38-39th Floor, Grand Gateway Office Tower 1, 1 Hongqiao Rd.,Xuhui District, Shanghai, 200030 China TEL +86-21-5407-6161 FAX +86-21-5407-6262
Mitsubishi Chemical Asia Pacific Pte. Ltd.	41 Science park Road #02-12/13 The Gemini Singapore Science Park II Singapore 117610 TEL +65-6263-0970 FAX +65-6423-1562
Processing-Technique Development Center	3-10, Ushiodori, Kurashiki, Okayama 712-8054, Japan TEL +81-86-455-5214 FAX +81-86-455-5289

URL: <http://www.soarnol.com/>

<http://www.soarus.com/>

<https://www.m-chemical.co.jp/>