

Introduction of Polymer Additives R&D

Outline



Establishment : 1917 (as Asahi Denka Kogyo)

Business field : Chemicals, Foods

Capital : 22,800 million¥

Affiliates : 38 (Domestic 16, Foreign 22)

Employees : 3,099 (group total, 2015.3)

TB of FY2015 : 222,746 million¥
(2,043 million\$)



ADEKA HQ

2017

100th
Anniversary <Since 1917>

Core Business : Polymer Additives, Foods



Functional Chemicals
Polymer Additives
Lubricants etc.



**IT and Electronic
chemicals**
Semiconductor
Circuit materials etc.



Commodity Chemicals
Polyalcohol etc.



Foods
Bread and oil ingredients etc.

■ Additives

- Antioxidants
- Light stabilizers
- Nucleating agents
- Clarifiers
- Metal deactivators
- Flame retardants



Flame retardants



Clarifiers



Light stabilizers/
Nucleating agents

■ PVC stabilizers & plasticizers

- Stabilizers
- Plasticizers



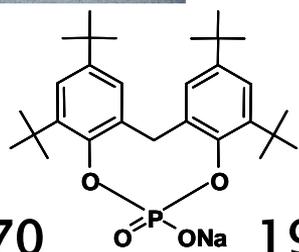
Lead & Tin free PVC stabilizers

Innovation of Polymer Additives by ADEKA



NA-21:
Clarifier

NA-71



NA-11: Nucleating agent

NA-27: New benchmark N.A.

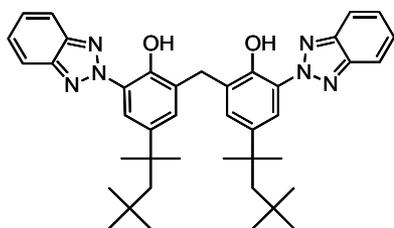
1970

1980

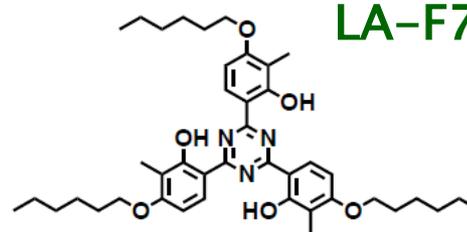
1990

2000

2010



LA-31:UVA



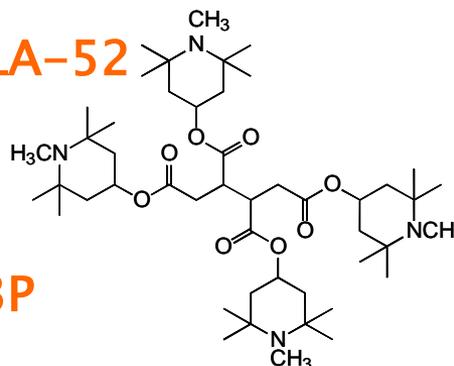
LA-F70

LA-402XP



LA-57:
HALS

LA-52



LA-81: NO-Alkyl HALS

FP-2000 series:
Flame retardant

LA-68

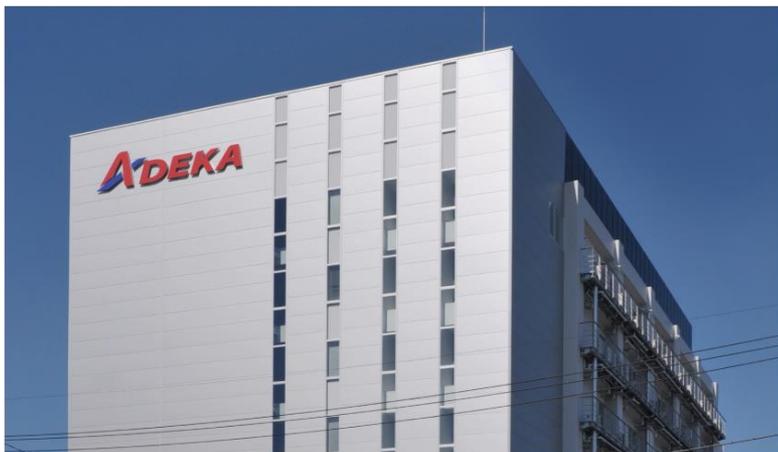
LA-63P



◆ Location : Japan



◆ Number of Researcher : ca.100



Solar panels on the roof

Design Concept :

- Urban-oriented Research Center
 - > Located in a residential neighborhood and just 3min from the train station
 - > Convenient access, ca. 40 min from Tokyo Station by local train (Commuter town of Tokyo, Northwest of Tokyo station)
 - > Environmental conscious facilities
 - photovoltaic generation (roof)
 - efficient scrubber system of chemicals
 - efficient noise reduction,etc.

Function of R&D Center

R&D Center, ca. 100 research chemists and engineers

as Research Center

- New chemistry research and development
- New technology development
- Development of new additive packages

as Solution Center

- Provide Solutions to our Customers
 - Proposing additives packages
 - Supporting analysis
 - Weatherability testing



Synthesis

- Small scale synthesis
- Bench scale facilities
- Analytical equipments:
GC, HPLC, GC-MS, LC-MS, GPC
NMR, IR, UV, X-ray fluorescence
ICP, AA, etc.

Application Testing/Processing

- Single and Twin screw extruders
- Injection molding
- Extrusion (sheet and film)
- Mixing roll, Press machine
- Blending

Weathering, Heat aging

- Xenon WOMs, Sunshine WOMs
- Super UV(metal halide), QUV
- Various oven types

Electrical Analysis

- VR, SR

Physicochemical Analysis

- Viscoelasticity
Flow tester, Melt Indexer, Plastograph, Vibron,
Capillary rheometer
- Thermal analyses
DSC, TG-DTA, TMA
- Crystallographic analysis
XRD
- Mechanical properties
Tensile & flexural strength tester,
Impact testing (Izod, Charpy, Dart Drop)
- Optical properties
Haze, Clarity, Gloss, Color(YI)
- Nucleation analysis
POM, Computer assisted-Nucleation counter
- Morphology
TEM, SEM

Flame retardancy test

- UL-94 (V, HB, 5VA, VTM and HF), Oxygen Index,
Cone Calorimeter, Glow wire,
NBS Smoke Chamber, FMVSS

Polymer Additives R&D Center



Analysis room



Testers



Laboratory table

Polymer Additives R&D Center



Extruder



Injection



Extruder for
Sheet & Film



Weathering Test Building



Xenon-Weather-O-Meter



UV Tester