

# 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

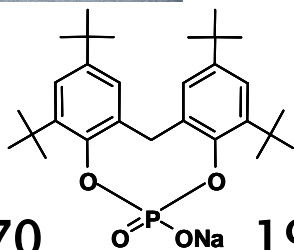


Lead & Tin free PVC stabilizers





NA-71



NA-27: New benchmark N.A.

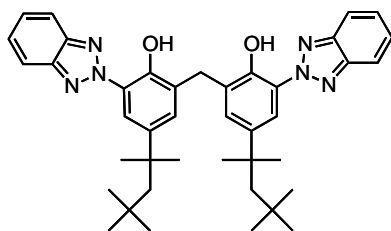
# 1970

# 1980

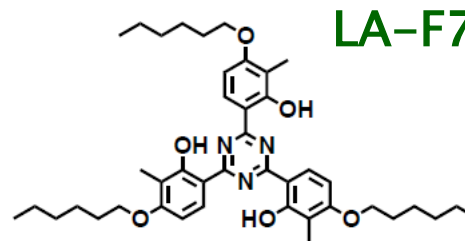
1990

2000

2010



## LA-31:UVA



# LA-F70



## LA-57: HALS

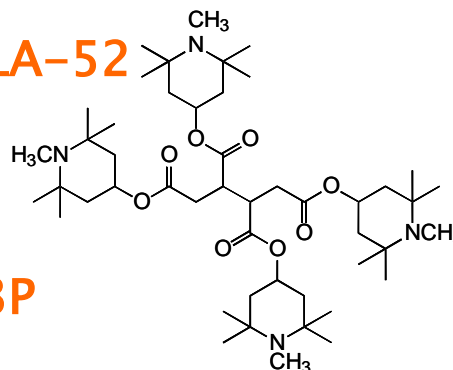
LA-52

# LA-402XP

## LA-81: NO-Alkyl HALS

LA-68

# LA-63P

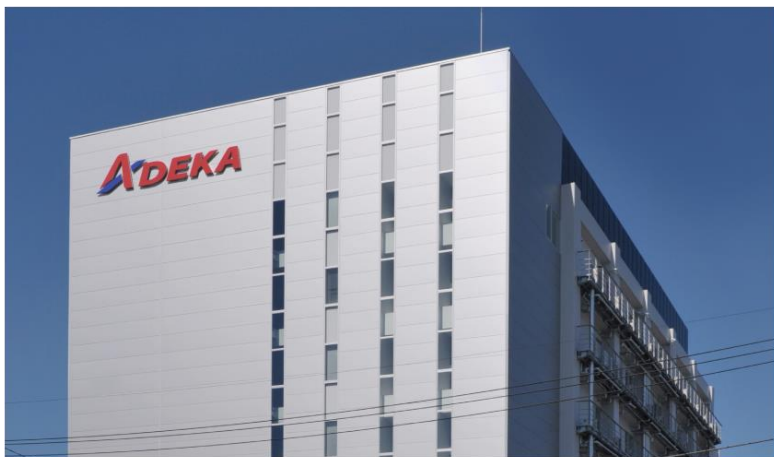


**FP-2000 series:**  
**Flame retardant**

## ◆ 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 additive packages
  - Supporting analysis
  - Weatherability testing



# R&D Facilities

## 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