Here are your solutions classified by chemical Performance, especially because Sanyo Chemical provides "Performance" Through Chemistry.

[IMPORTANT]
- The values in this catalogue are representatives.
- Chemical structures and main components are described in common names of representative components of the products.
- Before handling these materials, refer to the current Safety Data Sheet (SDS) for recommended protective equipment, and detailed precautionary and hazards information.
- When you need individual brochure or SDS, please contact to our sales department. Also SDS is available on our website.

Sanyo Chemical Industries, Ltd.
URL: https://www.sanyo-chemical.co.jp/eng
Our Products
Respond to Diverse Needs
by Various Performances

Cleaning
- to remove stains or dirt
- Wetting/Penetrating
- to wet or moisten
- to penetrate
- Emulsifying
- to make unmixable liquids to colloidal suspension (a state that small particles of liquid dispersing to another liquid) like milk
- Solubilizing
- to uniformly dissolve unmixable substance in another
- Dispersing
- to distribute as particles throughout a medium
- Flocculating
- to adhere each particles and form larger-size cluster
- Viscosity Controlling
- to thicken
- to prevent sagging
- to increase liquidity
- to reduce the variation of viscosity with temperature
- Defoaming
- to eliminate foam
- to avoid generating foam
- Lubricating/Leveling
- to slick
- to eliminate friction
- to give mold releasability
- to flatten the surface
- Electrical Conductive
- to conduct electricity
- Water Absorbent/Water Retentive
- to absorb and keep or hold liquid (water)
- Adhesive
- to stick to adherend
- to bind together
- to be sticky
- Plasticizing/Softening
- to increase moldability
- to impart flexibility
- to make soft
- Sealing/Waterproofing
- to prevent the passage or entry of water
- Cold or Heat Insulating
- to keep cold
- to prevent heat transmission
- to store heat
- Antibacterial
- to destroy bacteria or suppress of their growth
- Rust Preventive
- to avoid rusting
- Deterioration Preventive
- to suppress undesirable reactions such as oxidation, combustion reactions & decomposition
- Reaction Accelerating
- to accelerate intend reactions
- For Reacting/Forming
- Raw materials for synthesis, polymerization reactions, exipients, forming or shaping

Sanyo Chemical Provides Various Performances (functions)

Design and Produce of Performance Chemicals
- Organic synthesis
- Polymerization
- Surface control, etc.

NeeSeeds-Oriented Approach
Technology diversification: a technique developed to meet a certain need is combined with another technique to create another new seed technology for new products

Concurrent Engineering
A systematic approach to integrate accuracy and speed of time-to-market by simultaneous development through all processes in cooperation among R&D, production and engineering divisions

We provide diverse performances (functions) based on these strengths
## A Matrix Chart of Performance (function)-Application

Our products respond to diverse needs by various performances in many different fields.

<table>
<thead>
<tr>
<th>Application</th>
<th>Toiletries and Health Care</th>
<th>Petroleum and Automotives</th>
<th>Plastics and Textiles</th>
<th>Information &amp; Electronics</th>
<th>Environmental Protection, Construction &amp; Others</th>
<th>Polyurethanes*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold or Heat Insulating</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Other Functions</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
</tr>
</tbody>
</table>

* The compositions are described in common names of main components. Registered names for official compendia are described in other brochure (PRODUCT OUTLINE 2). For more details, please contact us.

*1 Polyurethanes: Polyurethanes are produced through reactions of polyls with isocyanates. Polyls (polyol) are such as polyether polyls (sometimes it may also refer to PPG as an acronym of polypropylene glycol for convenience), polyester polyls and polymer polyls.

*2 Foam: Polyurethane Foam is a polyurethane matrix containing micro-pores or cells by blowing reaction. It is used for seat cushioning materials, mattresses and heat insulators.

*3 Resins: Polyurethanes excepting foam. They are used for sealants, caulking agents, water-proofing coatings, elastomers, synthetic leather, paintings, adhesives and so on.

We developed the first polyether polyls for polyurethane foam in Japan in 1960 under the trade name of SANNIX. We have a world-class technology and a top-class product capacity in Japan, and therefore our PPG are used among polyurethane manufacturers not only in Japan, but also overseas. We have developed various polyether polyls for polyurethanes including PRIMEPOL; polypropylene polyl with increased primary hydroxyl content by only propylene oxide and they gained popularity.
Cleaning to remove stains or dirt

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEAULIGHT ECA, LCA</td>
<td>Carboxylic-based anionic surfactants</td>
<td>Sodium polyoxyethylene alkyl ether carboxylate</td>
<td>p57</td>
<td>liquid, paste</td>
<td>• Excellent foaming property even under weak acidity</td>
<td>For shampoos</td>
</tr>
<tr>
<td>BEAULIGHT SHAA</td>
<td></td>
<td>Sodium [(2-hydroxydodecyl)-oxy] acetate</td>
<td>p57</td>
<td>liquid</td>
<td>• Low irritancy to eyes &amp; skin</td>
<td></td>
</tr>
<tr>
<td>BEAULIGHT A-5000, ESS, LSS, SSS</td>
<td>Sulfo succinate-based anionic surfactants</td>
<td></td>
<td>p57, p58</td>
<td>liquid, paste</td>
<td>• In Japan, BEAULIGHT SHAA is approved for an exclusive use in cosmetics</td>
<td></td>
</tr>
<tr>
<td>NSA-400L</td>
<td>Carboxylic-based anionic surfactants</td>
<td>Polycarboxylate</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent calcium-ion trapping capability, high pH buffering &amp; soil-dispersion abilities</td>
<td>For powdered detergent</td>
</tr>
<tr>
<td>SANDET EN, END, ET</td>
<td>Sulfuric acid ester-based anionic surfactants</td>
<td>Sodium polyoxyethylene alkyl ether sulfate SANDET ET is a triethanolamine salt instead of sodium salt</td>
<td>p58</td>
<td>liquid</td>
<td>• Low irritancy to eyes &amp; skin because of its low content of sodium lauryl sulfate</td>
<td></td>
</tr>
<tr>
<td>BEAULIGHT NA-2SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFAN</td>
<td>Amide-based nonionic surfactants</td>
<td>Alkyl amide based surfactants</td>
<td>p60</td>
<td>liquid, solid, flake</td>
<td>• Foaming agent, foam stabilizer, thickener &amp; detergency enhancer for shampoos, liquid detergents &amp; bactericidal detergents/rust preventive</td>
<td></td>
</tr>
<tr>
<td>EMULMIN LCA-10</td>
<td>Ether-based (Amine type) nonionic surfactants</td>
<td>Polyoxyalkylene alkyl amine</td>
<td>p60</td>
<td>liquid</td>
<td>• Excellent surface tension reducing ability &amp; foam sustainability</td>
<td>For kitchen detergents</td>
</tr>
<tr>
<td>PUREMEEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSA-17</td>
<td>Proprietary nonionic surfactant</td>
<td>-</td>
<td>powder</td>
<td></td>
<td>Reinforcing detergency of powdered detergents/fluidity improver for powder</td>
<td></td>
</tr>
<tr>
<td>EMULMIN FL, HL</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene lauryl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid</td>
<td>• Exhibiting better low-temperature fluidity compared to other nonionic surfactants with the same HLB</td>
<td>For laundry</td>
</tr>
<tr>
<td>EMULMIN LS, NL, L</td>
<td></td>
<td>Polyoxyethylene lauryl ether derived from natural higher alcohols</td>
<td>p64</td>
<td>liquid, solid to paste</td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td></td>
</tr>
<tr>
<td>EMULMIN No.</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene alkyl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid, solid, paste</td>
<td>• Offering a wide selection from HLB lipophilicity/hydrophilicity parameter/biodegradable</td>
<td></td>
</tr>
<tr>
<td>CHEMICLEAN FS</td>
<td></td>
<td>Glycol ether based compound</td>
<td>-</td>
<td>liquid</td>
<td>• High Detergency/low foaming property/neural/halogen free</td>
<td></td>
</tr>
<tr>
<td>NAROACTY CL</td>
<td></td>
<td>Polyoxyethylene alkyl ether derived from synthetic higher alcohol</td>
<td>p61</td>
<td>liquid, solid, flake, paste</td>
<td>• Cleaning agent for electric devices/metal working oils</td>
<td></td>
</tr>
<tr>
<td>NAROACTY ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on the next page
### Wetting/Penetrating Cleaning

#### List by Performance (Function)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANNONIC TN SEDORAN FF, 5F, SNP-112</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyalkylene alkyl ether derived from synthetic alcohols</td>
<td>p61/p62</td>
<td>liquid, paste</td>
<td>• Low foaming property&lt;br&gt;• Excellent detergency&lt;br&gt;• Metal cleaners</td>
<td>*</td>
</tr>
<tr>
<td>SANNONIC FN, SS</td>
<td></td>
<td>Polyoxyethylene alkyl ether with limonene</td>
<td>p61</td>
<td>liquid</td>
<td>• SANNONIC FN: Excellent fluidity at low temperature&lt;br&gt;• SANNONIC SS: Excellent penetrating property&lt;br&gt;• Detergent/emulsifier/dispersant/wetting agent</td>
<td>*</td>
</tr>
<tr>
<td>SANNONIC DE-70</td>
<td></td>
<td>Polyoxyalkylene alkyl ether</td>
<td>p62</td>
<td>liquid</td>
<td>• Excellent penetrating property&lt;br&gt;• Detergent base</td>
<td>*</td>
</tr>
<tr>
<td>CHEMICLEAN DLE-20</td>
<td></td>
<td>Polyoxypolypropylene glycol</td>
<td>p63</td>
<td>liquid, flake, paste</td>
<td>• Low foaming property&lt;br&gt;• Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/gelling agent/binder/ coating agent, etc.)/fiber treating agent/fabric/leaving agent/emulsifier/dispersant/solubilizer/artificial agent</td>
<td>*</td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td></td>
<td>Polyoxyethylene</td>
<td>p64</td>
<td>petrolatum jelly</td>
<td>• Ethylene oxide adducts with narrow molecular weight distribution derived from natural alcohols&lt;br&gt;• Excellent penetrating property &amp; detergent&lt;br&gt;• Corresponding to the Japanese Pharmacopoeias &amp; exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing</td>
<td>*</td>
</tr>
<tr>
<td>LAUROMACROGOL 100</td>
<td></td>
<td>Polyoxyethylene lauryl ether derived from natural higher alcohol</td>
<td>p64</td>
<td>liquid, solid</td>
<td>• Offering a wide selection from lipophilic to hydrophilic products&lt;br&gt;• Emulsifier/dispersant/solubilizer/detergent base/fiber-leveling agent</td>
<td>*</td>
</tr>
<tr>
<td>IONET DL-200, DO, DS, MO, MS</td>
<td>Ester-based nonionic surfactants</td>
<td>Polyoxyethylene fatty acid diester or monoester</td>
<td>p65</td>
<td>liquid, solid</td>
<td>• Excellent detergent/low foaming property/neural/halogen free&lt;br&gt;• Not corresponding to a hazardous material on the Fire Defense Law (Japan)&lt;br&gt;• Cleaning agent for electronic components</td>
<td>*</td>
</tr>
<tr>
<td>CHEMICLEAN AM</td>
<td>Nonionic surfactants</td>
<td>Proprietary nonionic surfactant</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent foaming property &amp; hard-water resistance&lt;br&gt;• LEBON APL-D also excels in low temperature fluidity&lt;br&gt;• Base material for hair shampoos &amp; body shampoos</td>
<td>*</td>
</tr>
<tr>
<td>LEBON 101-H, 10S, APL, APL-D, CIB</td>
<td>Amino acid-type amphoteric surfactants</td>
<td>(Look at the page by composition)</td>
<td>p66</td>
<td>liquid</td>
<td>• Excellent foaming property &amp; hard-water resistance&lt;br&gt;• LEBON APL-D also excels in low temperature fluidity&lt;br&gt;• Base material for hair shampoos &amp; body shampoos</td>
<td>*</td>
</tr>
<tr>
<td>LEBON 2000, 2000HG, 2000LL, HC-30W, MY-30W, LD-36</td>
<td>Betaine-type amphoteric surfactants</td>
<td>(Look at the page by composition)</td>
<td>p66/p67</td>
<td>liquid</td>
<td>• Excellent foaming property &amp; hard-water resistance&lt;br&gt;• LEBON APL-D also excels in low temperature fluidity&lt;br&gt;• Base material for hair shampoos &amp; body shampoos</td>
<td>*</td>
</tr>
</tbody>
</table>

#### 2 Wetting/Penetrating

to wet or moisten to penetrate

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARABON DA-72</td>
<td>Sulfo succinate-based anionic surfactants</td>
<td>Sodium dioctyl sulfosuccinate</td>
<td>p57</td>
<td>liquid</td>
<td>• Extremely effective to wet hydrophobic materials&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings&lt;br&gt;• Penetrating agent/dispersant/emulsifier for emulsion polymerization</td>
<td>*</td>
</tr>
<tr>
<td>SANMORIN OT</td>
<td>Benzalkonium-based cationic surfactants</td>
<td>Benzalkonium chloride</td>
<td>p60</td>
<td>liquid</td>
<td>• Extremely effective to wet hydrophobic materials&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings&lt;br&gt;• Penetrating agent/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Particularly excellent penetrating property among surfactants/excellent wettability to hydrophobic materials/wetting &amp; penetrating agent/dispersant &amp; binder for granules/penetrating agent for agrichemical spreading/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td>*</td>
</tr>
<tr>
<td>CATION G-50</td>
<td>Benzalkonium-based cationic surfactants</td>
<td>Benzalkonium chloride</td>
<td>p60</td>
<td>liquid</td>
<td>• Wide spectrum antibacterial activities&lt;br&gt;• Germicide, deterrent for food factory/germicide for industrial use&lt;br&gt;• Hair conditioner &amp; treatment base</td>
<td>*</td>
</tr>
<tr>
<td>EMULMIN FL, HL</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxalkylene lauryl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid</td>
<td>• Extremely effective to wet hydrophobic materials&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings&lt;br&gt;• Penetrating agent/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Particularly excellent penetrating property among surfactants/excellent wettability to hydrophobic materials/wetting &amp; penetrating agent/dispersant &amp; binder for granules/penetrating agent for agrichemical spreading/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td>*</td>
</tr>
<tr>
<td>EMULMIN No.</td>
<td>Polyoxalkylene alkyl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid, solid, paste</td>
<td>• Extremely effective to wet hydrophobic materials&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings&lt;br&gt;• Penetrating agent/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Particularly excellent penetrating property among surfactants/excellent wettability to hydrophobic materials/wetting &amp; penetrating agent/dispersant &amp; binder for granules/penetrating agent for agrichemical spreading/dispersant/emulsifier for emulsion polymerization&lt;br&gt;• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Product Name</td>
<td>Composition Classification</td>
<td>Principal Component</td>
<td>Page</td>
<td>Form (20±5°C)</td>
<td>Uses &amp; Features (of all functions)</td>
<td>Major Applications</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------</td>
<td>---------------------</td>
<td>------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>
| NAROACTY CL      | Ethor-based nonionic surfactants | Polyoxyethylene alkyl ether derived from synthetic higher alcohols SANNONIC SS, DE-70, SANMORIN 11 are | p61  | liquid, solid, flake, paste | • Alkylene oxide addsucts with narrow molecular weight distribution  
  • Excellent detergency, emulsifiability  
  • Detergent base/detergent/emulsifier/dispersant/wetting agent |                                                                                       |
| NAROACTY ID      | Ethor-based nonionic surfactants | Polyoxyethylene alkyl ether                           | p61  | liquid                          | • Alkylene oxide addsucts with narrow molecular weight distribution  
  • Excellent penetrating property  
  • Detergent base  
  • Excellent penetrating property among surfactants  
  • Wetting- & penetrating agent |                                                                                       |
| SANNONIC FN, SS  | Ether-based nonionic surfactants | Polyoxyethylene alkyl ether                           | p61  | liquid                          | • SANNONIC FN: Excellent fluidity at low temperature  
  • SANNONIC SS: Excellent penetrating property  
  • Detergent/emulsifier/dispersant/wetting agent |                                                                                       |
| SANNONIC DE-70   | Ether-based nonionic surfactants | Polyoxyethylene alkyl ether                           | p62  | liquid                          | • Particularly excellent penetrating property  
  • Detergent base  
  • Excellent penetrating property |                                                                                       |
| SANMORIN 11      | Ethor-based nonionic surfactants | Polyoxyethylene alkyl ether                           | p62  | liquid                          | • Corresponding to Japanese Pharmaceutical Excipients  
  • Pharmaceutical excipients (solubilizer for liquid medicine/stabilizer/wetting agent for ointment/ suppository base/gelling agent/binder for tablets/coating agent)  
  • Cleaning agent for medical equipment |                                                                                       |
| NEWDET PE-85     | Ether-based nonionic surfactants | Polyoxyethylene polyoxypropylene glycol               | p63  | petrolatum jelly             | • Low foaming property  
  • Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/ gelling agent/binder/coating agent, etc.)/fiber treating agent lubricant/desizing agent/emulsifier/dispersant/solubilizer/artistic agent |                                                                                       |
| NEWPOL PE        | Ether-based nonionic surfactants | Polyoxyethylene polyoxypropylene glycol               | p63  | liquid, flake, paste           | • Excellent lubricating effect to skin & hair  
  • Wetting agent, moisturizer & viscosity modifier for cosmetics/defoaming agent |                                                                                       |
| LAUROMACROGOL 100| Ether-based nonionic surfactants | Polyoxyethylene lauryl ether derived from natural higher alcohol | p64  | petrolatum jelly             | • Ethylene oxide addsucts with narrow molecular weight distribution derived from natural alcohols  
  • Excellent penetrating property & detergency  
  • Corresponding to the Japanese Pharmacopoeias & exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing |                                                                                       |
| NEWPOL 50HB, 75H-90000, LB, NSQ, V | (Look at the page by composition) Ether-based nonionic surfactants | Polyoxyethylene lauryl ether derived from natural higher alcohol | p62  | liquid                          | Offering a wide selection from water-soluble to insoluble products  
  • Wetting agent, moisturizer & viscosity controller for cosmetics/defoaming lubricant/lubricant for machinery, metals & fabrics/defoaming agent/raw materials for lubricant, hydraulic oils/ quenching oil for machinery & metals/emulsion-breaker/heating-medium |                                                                                       |
| NEWPOL GEP-2800, TL | (Look at the page by composition) Ether-based nonionic surfactants | Polyoxyethylene triol/ Polyoxyethylene glycol        | p63  | liquid                          | • Excellent lubricating effect to skin & hair  
  • Wetting agent, moisturizer & viscosity modifier for cosmetics/defoaming agent |                                                                                       |
| NEWPOL GP, PP    | Ether-based nonionic surfactants | Polyoxyethylene triol/ Polyoxyethylene glycol        | p61  | liquid                          | • Non-volatile/low freezing point  
  • Wetting agent & moisturizer for cosmetics/raw material for cosmetics, surfactant & synthetic lubricant/releasing lubricant |                                                                                       |
| NEWPOL SP-750    | Ether-based nonionic surfactants | Polyoxyethylene sorbitol ether                        | -    | liquid                          | • Non-volatile/low freezing point  
  • Wetting agent for cosmetics/moisturizer |                                                                                       |
| TG-C             | Ester-based nonionic surfactants | Glycerol monostearate                                 | p65  | flake                          | • Softener, emulsifier, solubilizer & oiliness improver for cosmetics, creams, lotions & quasi drugs  
  • Lubricant & stabilizer of sustained drug releasing agents, tablets, pills & capsules of medicine |                                                                                       |
| IONET S          | Ester-based nonionic surfactants | Sorbitan mono- or di-fatty acid ester                | p65  | liquid, granule               | • SPAN type lipophilic surfactants derived from plants  
  • Emulsifier/dispersant/wettability modifier/nut inhibitor/solubilizer/defoaming agent  
  • Viscosity modifier for coatings & ink/leveling agent & softener for fibers/lubricant/ machining oil/metalworking oil |                                                                                       |
| IONET T          | Ester-based nonionic surfactants | Polyoxyethylene sorbitan monofatty acid ester        | p65  | liquid                          | • TWEEEN type hydrophilic surfactants derived from plants  
  • Emulsifier/dispersant/wettability modifier/nut inhibitor/solubilizer/leveling agent & softener for fibers/lubricant/machining oil/metalworking oil  
  • Plasticizer for enteric-soluble coating agents, etc./ointment bases/viscosity modifier for coatings & ink |                                                                                       |

Continued on the next page →
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYSORBATE 80</td>
<td>Ester-based nonionic surfactants</td>
<td>Modified sorbitan</td>
<td>-</td>
<td>liquid</td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/thicker/dispersant/binder/base material/auxiliary disintegrant)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Corresponding to the pharmacopoeias (USP/NF, EP) (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td>PEG</td>
<td>Polyols</td>
<td>Polyethylene glycol</td>
<td>p70</td>
<td>liquid, wax, paste, flake, powder</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Low acute toxicity/low irritancy to eyes &amp; skins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Widely used in various applications</td>
<td></td>
</tr>
<tr>
<td>MACROGOL</td>
<td>Polyols</td>
<td>Polyoxyethylene alkyl ether</td>
<td>p70</td>
<td>liquid, flake, powder, paste</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Corresponding to the Japanese Pharmacopoeias &amp; Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Base material for ointments &amp; suppositories/lubricant &amp; binder for tablets or capsules/ plasticizer &amp; solubilizer for manufacturing medicines</td>
<td></td>
</tr>
<tr>
<td>SANFRESH</td>
<td>Methacrylate/Acrylate-based</td>
<td>Cross-linked acrylic acid polymer sodium salt</td>
<td>p72</td>
<td>powder</td>
<td>• Crushed particulate superabsorbent polymer</td>
<td></td>
</tr>
<tr>
<td>METHACRYLATE</td>
<td>Methacrylate/Acrylate-based</td>
<td>Long-chain alkyl methacrylate or dialkylaminoalkyl methacrylate derivatives</td>
<td>p73</td>
<td>liquid</td>
<td>• Good copolymerizability with other vinyl monomers</td>
<td></td>
</tr>
</tbody>
</table>

3 Emulsifying

To make unmixable liquids to colloidal suspension (a state that small particles of liquid dispersing to another liquid) like milk

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEMINOL MBN-2</td>
<td>Carboxylic-based anionic surfactants</td>
<td>Sodium polycarboxylate</td>
<td>p57</td>
<td>liquid</td>
<td>• Emulsifier for emulsion &amp; latex</td>
<td></td>
</tr>
<tr>
<td>ELEMINOL JS-20</td>
<td>Sulfoacetate-based anionic surfactants</td>
<td>Sodium alkyl sulfosuccinate</td>
<td>p57</td>
<td>liquid</td>
<td>• Reactive emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td>CARABON DA-72</td>
<td>Sulfoacetate-based anionic surfactants</td>
<td>Sodium docyl sulfosuccinate</td>
<td>p57</td>
<td>liquid</td>
<td>• Extremely effective to wet hydrophobic materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td>SANMORIN OT</td>
<td>Sulfoacetate-based anionic surfactants</td>
<td>Cross-linked alkyl methacrylate</td>
<td>p57</td>
<td>liquid</td>
<td>• Penetrating agent/dispersant/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Particularly excellent penetrating property among surfactants/excellent wettability to hydrophobic materials/wetting- &amp; dispersant &amp; binder for granules/ penetrating agent for agricultural spreading/dispersant/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td>ELEMINOL CLS-20, SANDET ONA</td>
<td>(Look at the page by composition)</td>
<td></td>
<td>p58</td>
<td>liquid</td>
<td>• Emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for large-particle-size emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td>ELEMINOL NS-5S, RS-3000</td>
<td>(Look at the page by composition)</td>
<td></td>
<td>p58</td>
<td>liquid</td>
<td>• Emulsifier for emulsion polymerization (RS-3000 is a reactive emulsifier)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Excellent solubility to water, hard-water resistance, foaming property &amp; detergency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Low irritation to skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Hair shampoo &amp; detergent base/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td>SANDET EN</td>
<td>Ether-based nonionic surfactants</td>
<td>Sodium polyoxyethylene lauryl ether sulfate</td>
<td>p58</td>
<td>liquid</td>
<td>• Offering a wide selection from HLB (lipophilicity/hydrophilicity parameter)/biodegradable</td>
<td></td>
</tr>
<tr>
<td>EMULMIN No.</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene alkyl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid, solid, paste</td>
<td>• Detergent/emulsifier/dispersant/solubilizer/emulsifier for emulsion polymerization/ gelling, foaming &amp; wetting agent/oliness improver</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Sulfation, phosphorylation base/pulp cooking aid/leveling, soaping agent</td>
<td></td>
</tr>
</tbody>
</table>

3 Emulsifying

Besides, our subsidiary & affiliate; San Nopco Limited also provides related products (p91)
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>NARACTY CL</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyalkylene alkyl ether derived from synthetic higher alcohols</td>
<td>p61</td>
<td>liquid, solid, flake, paste</td>
<td>• Alkylene oxide adducts with narrow molecular weight distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SANNONIC SS is Polyoxyethylene alkyl ether</td>
<td>p61</td>
<td>liquid</td>
<td>• Excellent detergency, emulsifiability</td>
<td></td>
</tr>
<tr>
<td>SANNONIC FN, SS</td>
<td></td>
<td></td>
<td>p61</td>
<td>liquid</td>
<td>• Detergent/base/detergent/emulsifier/dispersant/wetting agent</td>
<td></td>
</tr>
<tr>
<td>EMULMIN CC</td>
<td></td>
<td>Polyoxyethylene cetyl ether derived from natural higher alcohols</td>
<td>p62</td>
<td>solid, wax</td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td>• Emulsifier for creams &amp; lotions/solubilizer/gelling &amp; foaming agent/dispersant</td>
</tr>
<tr>
<td>ELEMINOL HB-29</td>
<td></td>
<td>Polyoxyethylene tribenzyl phenyl ether</td>
<td>p62</td>
<td>liquid</td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td>• Emulsion stabilizer for emulsion &amp; latex</td>
</tr>
<tr>
<td>EMULMIN LS, NL, L</td>
<td></td>
<td>Polyoxyethylene lauryl ether derived from natural higher alcohols</td>
<td>p64</td>
<td>solid to paste</td>
<td>• Exhibiting better low-temperature fluidity compared to other nonionic surfactants with the same HLB</td>
<td>• Detergent/emulsifier/dispersant/wetting agent/solubilizer</td>
</tr>
<tr>
<td>EMULMIN FL, HL</td>
<td></td>
<td>Polyoxyalkylene lauryl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEMINOL 200L</td>
<td></td>
<td>Polyoxyethylene alkyl ether</td>
<td>p61</td>
<td>liquid</td>
<td>• Low foaming property</td>
<td>• Emulsifier for emulsion polymerization</td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td></td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p63</td>
<td>liquid, flake, paste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG-C</td>
<td></td>
<td>Glyceryl monostearate</td>
<td>p65</td>
<td>flake</td>
<td>• Softener, emulsifier, solubilizer, moisturizer &amp; oiliness improver for cosmetics, creams, lotions &amp; quasi drugs</td>
<td>• Lubricant &amp; stabilizer of sustained drug releasing agents, tablets, pills &amp; capsules of medicines</td>
</tr>
<tr>
<td>IONET DL-200, DO, DS, MO, MS</td>
<td></td>
<td>Polyoxyethylene fatty acid diester or monoester</td>
<td>p65</td>
<td>liquid, solid</td>
<td>• Offering a wide selection from lipophilic to hydrophilic products</td>
<td>• Emulsifier/dispersant/solubilizer/detergent base/fiber-leveling agent</td>
</tr>
<tr>
<td>IONET S</td>
<td></td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65</td>
<td>liquid, granule</td>
<td>• SPAN type lipophilic surfactants derived from plants</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>IONET T</td>
<td></td>
<td>Polyoxyethylene sorbitan monofatty acid ester</td>
<td>p65</td>
<td>liquid</td>
<td>• TWEEN type hydrophilic surfactants derived from plants</td>
<td>• Viscosity modifier for coatings &amp; ink/leveling agent &amp; softener for fibers/lubricant/machining oil/metalworking oil</td>
</tr>
<tr>
<td>POLYSORBATE 80</td>
<td></td>
<td>Modified sorbitan</td>
<td>-</td>
<td>liquid</td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>HITRON #3A</td>
<td></td>
<td>Specific nonionic surfactant (a mixture with petroleum solvent)</td>
<td>-</td>
<td>liquid (possibly jelly in winter)</td>
<td>• For pharmaceutical preparations/plasticizer/lubricant/solubilizer/wetting agent/defoaming agent</td>
<td>• Dispersing oil to sea water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• For pharmaceutical preparations/plasticizer/lubricant/solubilizer/wetting agent/defoaming agent</td>
<td>• Low toxicity to marine life</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant of spillage oil</td>
<td></td>
</tr>
</tbody>
</table>
## Solubilizing

Solubilizing to uniformly dissolve unmixable substance in another

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMULMIN FL, HL</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyalkylene lauryl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid</td>
<td>• Exhibiting excellent low-temperature fluidity compared to other nonionic surfactants with the same HLB</td>
<td>Detergent/emulsifier/dispersant/wetting agent/solubilizer</td>
</tr>
<tr>
<td>EMULMIN No.</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene alkyl ether derived from natural higher alcohols</td>
<td>p61</td>
<td>liquid, solid, paste</td>
<td>• Offering a wide selection from HLB (lipophilicity/hydrophilicity parameter)/biodegradable</td>
<td>Detergent/emulsifier/dispersant/solubilizer/for emulsion polymerization/gelling, foaming &amp; wetting agent/antifoaming agent/Sulfation, phospholipidation base/pulp cooking aid/leveling, foaming agent</td>
</tr>
<tr>
<td>EMULMIN CC</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene cetyl ether derived from natural higher alcohols</td>
<td>p62</td>
<td>solid, wax</td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td>Emulsifier for creams &amp; lotions/solubilizer/gelling &amp; foaming agent/dispersant</td>
</tr>
<tr>
<td>EMULMIN LS, NL, L</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyalkylene lauryl ether derived from natural higher alcohols</td>
<td>p64</td>
<td>solid to paste</td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td>Detergent/emulsifier for creams &amp; lotions/solubilizer/gelling &amp; foaming agent/dispersant</td>
</tr>
<tr>
<td>NEWDET PE-85</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxypolypropylene glycol</td>
<td>p63</td>
<td>petrolatum jelly</td>
<td>• Corresponding to Japanese Pharmaceutical Excipients</td>
<td>Detergent/emulsifier/solubilizer for liquid medicine/wetting agent for ointment/suppository base/gelling agent/binder for tablets/coating agent</td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxypolyethylene glycol</td>
<td>p63</td>
<td>liquid, flake, paste</td>
<td>• Low foaming property</td>
<td>Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/gelling agent/binder/coating agent, etc.)/for fiber treating agent (lubricant/desizing agent)/emulsifier/dispersant/solubilizer/artificial agent</td>
</tr>
<tr>
<td>NEWPOL EFP</td>
<td>Ether-based nonionic surfactants</td>
<td>Phenoxethanol</td>
<td>p61</td>
<td>liquid</td>
<td>• Excellent solubility of fats &amp; oils</td>
<td>Solvent of cosmetics, detergents/preservative for cosmetics</td>
</tr>
<tr>
<td>NEWPOL B-12</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxylkylene alkyly ether</td>
<td>p61</td>
<td>liquid</td>
<td>• Excellent solubility of fats &amp; oils</td>
<td>Solvent of detergent</td>
</tr>
<tr>
<td>NEWPOL SBF</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxylkylene glycol monoether or borate</td>
<td>p61</td>
<td>liquid</td>
<td>• High boiling point, excellent fluidity at low temperature</td>
<td>Solvent for brake oils</td>
</tr>
<tr>
<td>TG-C</td>
<td>Ester-based nonionic surfactants</td>
<td>Glycerol monostearate</td>
<td>p65</td>
<td>flake</td>
<td>• Softener, emulsifier, solubilizer, moisturizer &amp; oiliness improver for cosmetics, creams, lotions &amp; quasi drugs</td>
<td>Lubricant &amp; stabilizer of sustained drug releasing agents, tablets, pills &amp; capsules of medicine</td>
</tr>
<tr>
<td>IONET DL-200, DO, DS, MO, MS</td>
<td>Ester-based nonionic surfactants</td>
<td>Polyoxylkylene fatty acid diester or monoester</td>
<td>p65</td>
<td>liquid, solid</td>
<td>• Offering a wide selection from lipophilic to hydrophilic products</td>
<td>Emulsifier/dispersant/solubilizer/detergent base/fiber-leveling agent</td>
</tr>
<tr>
<td>IONET S</td>
<td>Ester-based nonionic surfactants</td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65</td>
<td>liquid, granule</td>
<td>• SPAN type lipophilic surfactants derived from plants</td>
<td>Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent/Viscosity modifier for coatings &amp; ink/leveling agent &amp; softener for fibers/lubricant/machining oil/metalworking oil</td>
</tr>
<tr>
<td>IONET T</td>
<td>Ester-based nonionic surfactants</td>
<td>Polyoxylkylene sorbitan monofatty acid ester</td>
<td>p65</td>
<td>liquid</td>
<td>• TWEEN type hydrophilic surfactants derived from plants</td>
<td>Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent &amp; softener for fibers/lubricant/machining oil/metalworking oil/Plasticizer for enteric-soluble coating agents, etc/ointment bases/viscosity modifier for coatings &amp; ink</td>
</tr>
<tr>
<td>POLYSORBATE 80</td>
<td>Modified sorbitan</td>
<td>Modified sorbitan</td>
<td>-</td>
<td>liquid</td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td>For pharmaceutical preparations (lubricant/solubilizer/wetting agent/emulsifier/thickener/dispersant/binder/base material/auxiliary disintegrant)</td>
</tr>
<tr>
<td>Product Name</td>
<td>Composition Classification</td>
<td>Principal Component</td>
<td>Page</td>
<td>Form (20±5°C)</td>
<td>Uses &amp; Features (of all functions)</td>
<td>Major Applications</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------</td>
<td>--------------------------------------</td>
<td>------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PEG</td>
<td>Polyols</td>
<td>Polyethylene glycol</td>
<td>p70</td>
<td>liquid, wax, paste, flake, powder</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Low acute toxicity/low irritancy to eyes &amp; skins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Widely used in various applications</td>
<td></td>
</tr>
<tr>
<td>MACROGOL</td>
<td>Polyols</td>
<td>p70</td>
<td></td>
<td>liquid, flake, powder, paste</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Corresponding to the Japanese Pharmacopoeias &amp; Pharmaceutical Excipients</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Base material for ointments &amp; suppositories/lubricant &amp; binder for tablets or capsules/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>plasticizer &amp; solubilizer for manufacturing medicine</td>
<td></td>
</tr>
<tr>
<td>SANFINE DM-200</td>
<td>Others</td>
<td>Poly(ethylene dimethyl ether)</td>
<td>p73</td>
<td>liquid</td>
<td>• Excellent solubility of fats &amp; oils</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Solvent for detergent</td>
<td></td>
</tr>
</tbody>
</table>

### 5 Dispersing

to distribute as particles throughout a medium

Beside, our subsidiary & affiliate; San Nopco Limited also provides related products (p91)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANCARRIER No.5L</td>
<td>Carboxylic-based anionic surfactants</td>
<td>Mixture of acrylic polymer &amp; sodium aluminate</td>
<td>-</td>
<td>liquid</td>
<td>• Preventing degradation &amp; viscosity increase of drilling mud</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant for bentonite muds (drilling mud)</td>
<td></td>
</tr>
<tr>
<td>SS-B</td>
<td></td>
<td>Polycarboxylate</td>
<td>p57</td>
<td>liquid</td>
<td>• Preventing viscosity increase of drilling mud &amp; the collapse of unstable strata</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant for drilling mud (stabilization fluid/wall-building aid)</td>
<td></td>
</tr>
<tr>
<td>CARRYBON L-400</td>
<td></td>
<td>Polycarboxylate</td>
<td>p57</td>
<td>liquid</td>
<td>• Providing low-viscosity pigment slurry with high dispersion stability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant for pigment slurry of water-soluble or emulsion coatings</td>
<td></td>
</tr>
<tr>
<td>SANSPARL PS-2</td>
<td></td>
<td>Mixture of acrylic polymer &amp; sodium aluminate</td>
<td>-</td>
<td>liquid</td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Pigment dispersant</td>
<td></td>
</tr>
<tr>
<td>TOXANON</td>
<td></td>
<td>Polycarboxylate</td>
<td>p57</td>
<td>liquid</td>
<td>• Imparting excellent spreading property to agrichemical granules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Excellent binding property/enhancing hardness of granules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant &amp; binder for agrichemical granules</td>
<td></td>
</tr>
<tr>
<td>CARABON DA-72</td>
<td>Sulfosuccinate-based anionic surfactants</td>
<td>Sodium dioctyl sulfosuccinate</td>
<td>p57</td>
<td>liquid</td>
<td>• Extremely effective to wet hydrophobic materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Penetrating agent/dispersant/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td>SANSEPARER 100</td>
<td>Sulfosuccinate-based anionic surfactants</td>
<td>Sodium dioctyl sulfosuccinate</td>
<td>p57</td>
<td>wax</td>
<td>• Suitable for oil-based, organic-solvent based coatings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Without water nor organic solvent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Internal releasing agent for PMMA/pigment dispersant</td>
<td></td>
</tr>
<tr>
<td>SANMORIN OT</td>
<td>Sulfosuccinate-based anionic surfactants</td>
<td>Sodium dioctyl sulfosuccinate</td>
<td>p57</td>
<td>liquid</td>
<td>• Particularly excellent penetrating property among surfactants/excellent wettability to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>hydrophobic materials/wetting- &amp; penetrating agent/dispersant &amp; binder for granules/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>penetrating agent for agrichemical spreading/dispersant/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td>IONET D-2</td>
<td>Sulfonate-based anionic surfactants</td>
<td>Sodium naphthalenesulfonate formalin condensate</td>
<td>-</td>
<td>powder</td>
<td>• Low foaming property</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Pigment dispersant</td>
<td></td>
</tr>
<tr>
<td>SANYO LEVELON PHL</td>
<td>Sulfonate-based anionic surfactants</td>
<td>Sodium naphthalenesulfonate formalin condensate</td>
<td>p58</td>
<td>liquid</td>
<td>• Emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for large-particle-size emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td>SANDET ONA</td>
<td>Sulfuric acid ester-based anionic surfactants</td>
<td>Sodium 2-ethylhexyl sulfate</td>
<td>p58</td>
<td>liquid</td>
<td>• Emulsifier for emulsion polymerization</td>
<td></td>
</tr>
</tbody>
</table>

Continued on the next page
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSA-17</td>
<td>Proprietary nonionic surfactant</td>
<td>- powder</td>
<td></td>
<td></td>
<td>• Reinforcing detergency of powdered detergents/fluidity improver for powder</td>
<td></td>
</tr>
<tr>
<td>EMULMIN No.</td>
<td>Polyoxyethylene alkyl ether derived from natural higher alcohols</td>
<td>p61 liquid, solid, paste</td>
<td></td>
<td></td>
<td>• Offering a wide selection from HLB lipophilicity/hydrophilicity parameter/biodegradable detergent/dispersant/solubilizer/emulsifier for emulsion polymerization/gelling, foaming &amp; wetting agent/stabilizer/improver for flowability, releasability &amp; abrasion-resistance</td>
<td></td>
</tr>
<tr>
<td>EMULMIN CC</td>
<td>Polyoxyethylene cetyl ether derived from natural higher alcohols</td>
<td>p62 solid, wax</td>
<td></td>
<td></td>
<td>• Hardly hydrolyzed even in the presence of acidity or alkalinity</td>
<td></td>
</tr>
<tr>
<td>EMULMIN FL, HL</td>
<td>Polyoxyalkylene lauryl ether derived from natural higher alcohols</td>
<td>p61 liquid</td>
<td></td>
<td></td>
<td>• Exhibiting better low-temperature fluidity compared to other nonionic surfactants with the same HLB</td>
<td></td>
</tr>
<tr>
<td>EMULMIN LS, NL, L</td>
<td>Polyoxyethylene lauryl ether derived from natural higher alcohols</td>
<td>p64 liquid, solid to paste</td>
<td></td>
<td></td>
<td>• Detergent/emulsifier for creams &amp; lotions/solubilizer/gelling &amp; foaming agent/dispersant</td>
<td></td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p63 liquid, flake, paste</td>
<td></td>
<td></td>
<td>• Low foaming property</td>
<td></td>
</tr>
<tr>
<td>NAROACTY CL</td>
<td>Polyoxyalkylene alkyl ether derived from synthetic higher alcohols</td>
<td>p61 liquid, solid, flake, paste</td>
<td></td>
<td></td>
<td>• Alkylene oxide adducts with narrow molecular weight distribution</td>
<td></td>
</tr>
<tr>
<td>SANNONIC FN, SS</td>
<td>Polyoxyethylene alkyl ether</td>
<td>p61 p62 liquid</td>
<td></td>
<td></td>
<td>• Excellent detergency, emulsifiability</td>
<td></td>
</tr>
<tr>
<td>IONET DL-200, DO, DS, MO, MS</td>
<td>Polyoxyethylene fatty acid diester or monoester</td>
<td>p65 liquid, solid</td>
<td></td>
<td></td>
<td>• SANNONIC FN: Excellent fluidity at low temperature</td>
<td></td>
</tr>
<tr>
<td>IONET S</td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65 liquid, granule</td>
<td></td>
<td></td>
<td>• SANNONIC SS: Excellent penetrating property</td>
<td></td>
</tr>
<tr>
<td>IONET T</td>
<td>Polyoxyethylene sorbitan mono fatty acid ester</td>
<td>p65 liquid</td>
<td></td>
<td></td>
<td>• Detergent/emulsifier/dispersant/wetting agent</td>
<td></td>
</tr>
<tr>
<td>POLYSORBATE 80</td>
<td>Modified sorbitan</td>
<td>- liquid</td>
<td></td>
<td></td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td></td>
</tr>
<tr>
<td>SANWAX</td>
<td>Low-molecular-weight polyethylene</td>
<td>p68 powder, pellet, etc.</td>
<td></td>
<td></td>
<td>• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/thickener/dispersant/binder/base material/auxiliary disintegrant)</td>
<td></td>
</tr>
<tr>
<td>VISCOL</td>
<td>Olefin or Styrene-based compounds</td>
<td>Low-molecular-weight polyproplylene</td>
<td>p68 powder</td>
<td></td>
<td>• Corresponding to the pharmacopeias (JP, USP/NF, EP) (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td>UMEX</td>
<td>Acid modified low-molecular-weight polypropylene</td>
<td>p68 granule, powder, etc.</td>
<td></td>
<td></td>
<td>• Moderate hardness, low melt viscosity equivalent to polyethylene/incompatible with polymers excepting polyolefins/form cosmetics/abrasives/anti-sagging agents/binder for ink/pigments, filler dispersants/improver for fluidity, softening point, abrasion-resistance &amp; releasability/flatting agent/lubricant/fixing agent for agrichemicals</td>
<td></td>
</tr>
</tbody>
</table>
## Flocculating

Flocculating is to adhere each particle and form larger-size clusters.

### Product Name: SERABON DH-505
- **Composition Classification**: Anionic surfactants
- **Principal Component**: Proprietary anionic surfactant
- **Page**: p68
- **Form (20±5°C)**: Liquid
- **Uses & Features**:
  - Dehydration promoting agent for metal sulfide concentration

### Product Name: ACRYLATE SMC-80H
- **Composition Classification**: Olefin or Styrene-based compounds
- **Principal Component**: Dimethylaminoethyl acrylate quaternary salt
- **Page**: p72
- **Form (20±5°C)**: Liquid
- **Uses & Features**:
  - Monomer for water-soluble cationic polymer/flocculant/papermaking chemicals

### Product Name: CATION 300
- **Composition Classification**: Water soluble cationic polymer
- **Page**: p70
- **Form (20±5°C)**: Liquid
- **Uses & Features**: Organic coagulant for industrial wastewater treatment

### Product Name: SACRIS
- **Composition Classification**: Methacrylate/Acrylate-based
- **Principal Component**: Water soluble acrylic polymer
- **Page**: p68
- **Form (20±5°C)**: Powder
- **Uses & Features**:
  - Offering anionic, cationic & amphoteric polymer
  - Thickener/gelling agent/flocculant/wastewater treatment/sizing agent in paper making/seed binder for slope greening

### Product Name: SANQUICK
- **Composition Classification**: Methacrylate/Acrylate-based
- **Principal Component**: Water soluble acrylic polymer (ultrahigh molecular weight)
- **Page**: p68
- **Form (20±5°C)**: Liquid
- **Uses & Features**: Offering cationic or amphoteric polymer

### Product Name: SANFLOC
- **Composition Classification**: Methacrylate or dialkylaminoalkyl methacrylate derivatives
- **Page**: p68
- **Form (20±5°C)**: Liquid, powder
- **Uses & Features**: Offering a wide selection depending on ionic type of polymers (anionic, cationic, nonionic & amphoteric)

### Product Name: METHACRYLATE
- **Composition Classification**: Long-chain alkyl methacrylate or dialkylaminoalkyl methacrylate derivatives
- **Page**: p70
- **Form (20±5°C)**: Liquid
- **Uses & Features**: Good copolymerizability with other vinyl monomers

### Major Applications
- For flocculation/settling
- For wastewater treatment
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| BEAULIGHT ECA, LCA    | Carboxylic-based anionic surfactants           | Sodium polyoxyethylene alkyl ether carboxylate                                        | p57  | liquid, paste  | • Excellent foaming property even under weak acidity  
• Low irritancy to eyes & skin  
• Base material for hair shampoos, body shampoos & face washes  
• In Japan, BEAULIGHT SHAA is approved for an exclusive use in cosmetics                                                                                                                     |                                                                                   |
| BEAULIGHT SHAA        | (Look at the page by composition)              | Sodium [(2-hydroxydodecyl)-oxy] acetate                                               | p57  | liquid         |                                                                                                                                  |                                                                                   |
| BEAULIGHT A-5000, ESS, LSS, SSS | Sulfosuccinate-based anionic surfactants          | Sodium polyoxyethylene alkyl ether sulfate  
SANDET ET is a triethanolamine salt instead of sodium salt | p57, p58 | liquid, paste | • Excellent solubility to water, hard-water resistance, foaming property & detergency  
• Low irritation to skin  
• Hair shampoo & detergent base/emulsifier for emulsion polymerization  
• Low irritancy to eyes & skin because of its low content of sodium lauryl sulfate  
• Base material for hair or body shampoos & detergents                                                                                                                                    |                                                                                   |
| SANDET EN, END, ET    | Sulfonic acid ester-based anionic surfactants |                                                                                      | p58  | liquid         |                                                                                                                                  |                                                                                   |
| BEAULIGHT NA-2SS      | Proprietary anionic surfactants                |                                                                                      | -    | paste          |                                                                                                                                  |                                                                                   |
| SANSPARL RA-33        | Amide-based nonionic surfactants               | Alkyl amide based surfactants                                                         | p60  | liquid, solid, flake |                                                                                                                                  |                                                                                   |
| PROFAN                | Ether-based (amine type) nonionic surfactants  | Polyoxylkylene alkyl amine                                                           | p60  | liquid         | • Excellent surface tension reducing ability & foam sustainability  
• Kitchen detergent base  
• Offering a wide selection from HLB (lipophilicity/hydrophilicity parameter)/biodegradable  
• Detergent/emulsifier/dispersant/solubilizer/emulsifier for emulsion polymerization/  
  gelling, foaming & wetting agent/solubility improver  
• Sulphation, phosphorylation base/pulp cooking aid/leveling, soaping agent  
• Hardly hydrolyzed even in the presence of acidity or alkalinity  
• Emulsifier for creams & lotions/solubilizer/gelling & foaming agent/dispersant  
• EMULMIN LS, NL, L can be emulsifiers for emulsion polymerization                                                                                                                      |                                                                                   |
| EMULMIN LCA-10        | Ether-based (amine type) nonionic surfactants  | Polyoxylkylene alkyl amine                                                           | p60  | liquid         |                                                                                                                                  |                                                                                   |
| EMULMIN No.           | Ether-based (amine type) nonionic surfactants  | Polyoxylkylene alkyl ether derived from natural higher alcohols                      | p61  | liquid, solid, paste |                                                                                                                                  |                                                                                   |
| EMULMIN CC            | Ether-based (amine type) nonionic surfactants  | Polyoxylkylene cetly ether derived from natural higher alcohols                      | p62  | solid, wax     |                                                                                                                                  |                                                                                   |
| EMULMIN LS, NL, L     | Ether-based (amine type) nonionic surfactants  | Polyoxylkylene lauryl ether derived from natural higher alcohols                     | p64  | liquid, solid to paste |                                                                                                                                  |                                                                                   |
| LEBON 101-H, 105, APL, APL-D, CIB | Amino acid-type amphoteric surfactants            |                                                                                        | p66  | liquid         | • Excellent foaming property & hard-water resistance  
• LEBON APL-D also excels in low temperature fluidity  
• Base material for hair shampoos & body shampoos  
• Creates fine bubbles in concrete & allows it to become lightweight  
• Foaming agent for foamed concrete                                                                                                          |                                                                                   |
| LEVEFLOW SR-21        | Proprietary surfactant                          |                                                                                        | -    | liquid         |                                                                                                                                  |                                                                                   |
### Defoaming

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLORIN</td>
<td>Ether-based anionic surfactants</td>
<td>Polyoxyalkylene glycol or polyoxypropylene monobutyl ether</td>
<td>p61 liquid</td>
<td>• Defoaming agent for the fermentation industries</td>
<td></td>
</tr>
<tr>
<td>NEWPOL 50HB, 75H-90000, LB, NSQ, V</td>
<td>Ether-based nonionic surfactants</td>
<td>(Look at the page by composition)</td>
<td>p62 liquid</td>
<td>• Offering a wide selection from water-soluble to insoluble products</td>
<td></td>
</tr>
<tr>
<td>NEWPOL GEP-2800, TL</td>
<td>Ethyl-based nonionic surfactants</td>
<td>(Look at the page by composition)</td>
<td>p63 liquid</td>
<td>• Excellent lubricating effect to skin &amp; hair</td>
<td></td>
</tr>
<tr>
<td>IONET S</td>
<td>Ester-based nonionic surfactants</td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65 liquid, granule</td>
<td>• SPAN type lipophilic surfactants derived from plants</td>
<td></td>
</tr>
</tbody>
</table>

### Lubricating/Leveling

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANSEPARER 100</td>
<td>Sulfosuccinate-based anionic surfactants</td>
<td>Sodium dioctyl sulfosuccinate</td>
<td>p57 wax</td>
<td>• Suitable for oil-based, organic-solvent based coatings</td>
<td></td>
</tr>
<tr>
<td>HIGHCLEAN</td>
<td>Anionic surfactants</td>
<td>Compound of lubricant &amp; proprietary antibacterial surfactant</td>
<td>- liquid (possibly jelly in winter)</td>
<td>• Chlorine free</td>
<td></td>
</tr>
<tr>
<td>ECONOL</td>
<td>Cationic surfactants</td>
<td>Alkyltrimethylammonium chloride</td>
<td>p59 liquid, solid</td>
<td>• Imparting smoothness, pliability &amp; tenseness-stiffness finished feeling to hair</td>
<td></td>
</tr>
<tr>
<td>CATION DSV</td>
<td>Cationic surfactants</td>
<td>Distearidyltrimethylammonium chloride</td>
<td>p59 flake</td>
<td>• Imparting excellent flexibility &amp; antistaticity to hair and fibers</td>
<td></td>
</tr>
<tr>
<td>LEBON TM-18, 18PA</td>
<td>Cationic surfactants</td>
<td>Stearytrimethylammonium chloride</td>
<td>p59 solid</td>
<td>• Imparting smoothness, pliability &amp; tenseness-stiffness finished feeling to hair/long-lasting softness &amp; smoothness</td>
<td></td>
</tr>
<tr>
<td>CATION LQ</td>
<td>Cationic surfactants</td>
<td>Ethyl sulfonic acid lanolin fatty acid amnonpropylethyl dimethylammonium</td>
<td>p59 paste</td>
<td>• Imparting excellent moisturizing, antistaticity &amp; tactile property to hair/long-lasting softness &amp; smoothness</td>
<td></td>
</tr>
<tr>
<td>CATION SF</td>
<td>Sulfonate-based cationic surfactants</td>
<td>Imidazolinium compound</td>
<td>p59 liquid to paste</td>
<td>• Imparting excellent flexibility, antistaticity &amp; water-absorbing effect</td>
<td></td>
</tr>
<tr>
<td>CATION S</td>
<td>Cationic surfactants</td>
<td>Stearyltrimethylbenzylammonium chloride</td>
<td>p60 solid</td>
<td>• Imparting smoothness, pliability &amp; tenseness-stiffness finished feeling to hair</td>
<td></td>
</tr>
<tr>
<td>BLEMBER</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyalkylene alkyd ether</td>
<td>p61 liquid</td>
<td>• Excellent lubricity, oil separation performance/low foaming property</td>
<td></td>
</tr>
<tr>
<td>NEWDETE PE-85</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p63 petrolatum jelly</td>
<td>• Corresponding to Japanese Pharmaceutical Excipients</td>
<td></td>
</tr>
</tbody>
</table>

Beside, our subsidiary & affiliate; San Nopco Limited also provides related products (p91)
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| NEWPOL PE   | Ether-based nonionic surfactants | Polyoxymethylene polyoxypropylene glycol | p63 | liquid, flake, paste | • Low foaming property  
• Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/gelling agent/bind/defoaming agent, etc.)/fiber treating agent [lubricant/dispersant/solubilizer/antistatic agent]  
For lubricant for fibers | For lubricant for fibers |
| NEWPOL 50HB, 75H-90000, LB, NSQ, V | (Look at the page by composition) | Polyoxymethylene polyoxypropylene glycol | p62 p63 p64 | liquid | • Offering a wide selection from insoluble to soluble products  
• Wetting agent, moisturizer & viscosity controller for cosmetics/releasing lubricant/lubricant for machinery, metals & fabrics/defoaming agent/raw materials for lubricant, hydraulic oils/ quenching oil for machinery & metals/emulsion-breaker/heating-medium  
For lubricant for fibers | For lubricant for fibers |
| NEWPOL GEP-2800, TL | (Look at the page by composition) | Polyoxymethylene triol, polyoxymethylene glycol | p61 p64 | liquid | • Excellent lubricating effect to skin & hair  
• Wetting agent, moisturizer & viscosity modifier for cosmetics/defoaming agent  
For lubricant for fibers | For lubricant for fibers |
| TG-C | | Glyceril monostearate | p65 | flake | • Softener, emulsifier, solubilizer, moisturizer & oiliness improver for cosmetics, creams, lotions & quasi drugs  
• Lubricant & stabilizer of sustained drug releasing agents, tablets, pills & capsules of medicine | For lubricant for fibers, cosmetics |
| IONET DL-200, DO, DS, MO, MS | | Polyoxymethylene fatty acid diester or monoester | p65 | liquid, solid | • Offering a wide selection from lipophilic to hydrophilic products  
• Emulsifier/dispersant/solubilizer/detergent base/fiber-leveling agent  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| IONET S | Ester-based nonionic surfactants | Sorbitan mono- or di-fatty acid ester | p65 | liquid, granule | • SPAN type lipophilic surfactants derived from plants  
• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent  
• Viscosity modifier for coatings & ink/fiber-leveling agent & softener for fibers/lubricant/machining oil/metalworking oil  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| IONET T | | Polyoxymethylene sorbitan monofatty acid ester | p65 | - liquid | • TWEEN type hydrophilic surfactants derived from plants  
• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/leveling agent & softener for fibers/lubricant/machining oil/metalworking oil  
• Plasticizer for enteric-soluble coating agents, etc./ointment bases/viscosity modifier for coatings & ink  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| POLYSORBATE 80 | | Modified sorbitan | - | liquid | • Derived from plants/animal ingredients nor genetically-modified ingredients  
• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/thickener/dispersant/bind/base material/auxiliary disintegrant)  
• Corresponding to the pharmacopoeias (JP, USP/NF, EP) (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)  
• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/thickener/dispersant/bind/base material/auxiliary disintegrant)  
• Corresponding to the pharmacopoeias (JP, USP/NF, EP) (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| SANWAX | Olefin-based compounds | Low-molecular-weight polyethylene | p68 | powder, pellet, etc. | • Moderate hardness, low melt viscosity equivalent to polyethylene/incompatible with polymers excepting polyolefins/for cosmetics/abrasives/anti-sagging agents/bind for ink/pigments, filler dispersants/improvement for flowability, softening point, abrasion-resistance & releasability/flatting agent/lubricant/fixing agent for agrochemicals  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| VISCOL | | Low-molecular-weight polypropylene | p68 | powder | • Moderate hardness, low melt viscosity equivalent to polypropylene/incompatible with polymers excepting polyolefins/for abrasives/anti-sagging agents/bind for ink/pigment, filler dispersant/releasing agent for toner/improver for flowability, releasability, softening point & abrasion-resistance/flatting agent/lubricant | For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| SANFRIC | Metallic compounds/ Acids/Acid Anhydrides | Organomolybdenum compound/fatty acid compound | p69 | liquid | • Friction reducer or friction modifier/anti-wear agent or wear inhibitor/lubricity improver for fuel oils  
• Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness  
• Low acute toxicity/low irritancy to eyes & skins  
• Widely used in various applications  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| PEG | Polyols | Polyethylene glycol | p70 | liquid, flake, powder | • Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness  
• Corresponding to the Japanese Pharmacopoeias & Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)  
• Base material for ointments & suppositories/lubricant & binder for tablets or capsules/plasticizer & solubilizer for manufacturing medicine  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
| MACROGOL | | Polyethylene glycol | p70 | liquid, flake, powder, paste | • Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness  
• Corresponding to the Japanese Pharmacopoeias & Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)  
• Base material for ointments & suppositories/lubricant & binder for tablets or capsules/plasticizer & solubilizer for manufacturing medicine  
For lubricant for fibers, cosmetics | For lubricant for fibers, cosmetics |
### List by Performance (Function)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| ACLUBE       | Carboxylate/Acrylate-based | Acrylic copolymer & refined mineral oil | p72  | liquid        | • Contributing to a reduction of fuel consumption to reduce the viscosity of lubricant depending on temperature  
• Viscosity Index Improver/Viscosity Modifier (VII/VM) or pour point depressant for lubricating, hydraulic & engine oils/dewaxing aid during the production of lubricating oils | |
| PERMARIN     | Urethane series           | Polyurethane emulsion | p74  | liquid        | • Resulting coating film has excellent flexibility, water-, adhesion- & chemical resistance  
• Raw material for coatings, ink & adhesives/binder for pigment printing  
• Texture modifier/shrink-resistant finishing agent/Imparting elastic repulsion/ pilling preventing agent | |

### Adhesive

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| TOXANON      | Carboxylate-based anionic surfactants | Polycarboxylate | -    | liquid        | • Imparting excellent spreading property to agrichemical granules  
• Excellent binding property/enhancing hardness of granules  
• Dispersant & binder for agrichemical granules | |
| NEWDETE PE-85| Ether-based nonionic surfactants | Polyoxyethylene polyoxypropylene glycol | p63  | petrolatum jelly    | • Corresponding to Japanese Pharmaceutical Excipients  
• Pharmaceutical excipients (solubilizer for liquid medicine/stabilizer/wetting agent for ointment/ suppository base/gelling agent/binder for tablets/coating agent)  
• Cleaning agent for medical equipment | |
| NEWPOL PE    | Ether-based nonionic surfactants | Modified polyether | p63  | liquid, paste | • Low foaming property  
• Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/ gelling agent/binder/coating agent, etc.)/fiber treating agent (lubricant/desizing agent)/emulsifier/dispersant/solubilizer/antistatic agent | |
| NEWPOL T-240U| Ester-based nonionic surfactants | Modified sorbitan | -    | block         | • Freezing point (55-60°C)/slow dissolution to water  
• Binder for aromatic deodorant toilet cleaner | |
| POLYSORBATE 80| Ester-based nonionic surfactants | Modified sorbitan | -    | liquid        | • Derived from plants/no animal ingredients nor genetically-modified ingredients  
• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/ emulsifier/thickener/dispersant/binder/base material/auxiliary disintegrant)  
• Corresponding to the pharmacopoeias (JP, USP/NF, EP) (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing) | |
| CHEMITYLEN PEB-13ST | Esters | Bisphenol-A type unsaturated polyester | p67  | powder        | • Binder for glass chopped strand mats for FRP | |
| ACROBINDER BG-7 | Olefin-based compounds | Butadiene & maleic acid copolymer | -    | liquid        | • Binder for fiberglasses  
• Especially suitable for FRTR (Fiber-Reinforced Thermo Plastic) | |
| UMEX         | Acid modified low-molecular-weight polypropylene | Granule, powder, etc. | p88  |             | • Dispersant for pigments, fillers & wood/flour/hot-melt adhesives  
• Resin modifier for polyolefins (such as improving adhesion) | |
| DSA, PDAS-DA | Acids/Acid Anhydrides | Alkenyl succinic anhydride | p69  | liquid        | • Imparting long pot life, excellent electrical insulating property, flexibility & bending strength to resins  
• Epoxy curing agent/rust preventive/corrosion inhibitor | |
| POLYMIDE L   | Nitrogen-Containing Compounds | Polyamideamine | p69  | liquid        | • Cured epoxy resin has rust prevention, excellent adhesion, toughness & flexibility  
• Curing agent for epoxy resin used to coatings, adhesives, civil engineering & construction, laminating & coating materials, etc. | |
| POLYMIDE S   | Nitrogen-Containing Compounds | Polyamideamine | p69  | powder        | • Resulting coating film has excellent water-, chemical-, abrasion-, weather-, oil-, blocking-resistance  
• Excellent glossiness & adhesion to polyolefin films  
• Resin for special greasing printing ink | |
| MELPOL F-220 | Polylols | Isocyanate modified polyether | -    | pellet        | • Aquous solution has surface activating ability/forming flexible & elastic film  
• Decomposing thermally at relatively low temperature & hardly-leaving ash after incineration  
• Sizing agent for glass-fibers (warp-yarn)/water-soluble polymer | |
## List by Performance (Function)

### URL: https://www.sanyo-chemical.co.jp/eng
### E-mail: sanyoproduct@sanyo-chemical.group
### Fax: +81-3-3245-1697
### Tel: +81-3-5200-3400

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition</th>
<th>Classification</th>
<th>Principal Component</th>
<th>Page Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEG 29-30</td>
<td>Polyols</td>
<td>PEG</td>
<td>p70 liquid, wax, paste, flake, powder</td>
<td>-</td>
<td>Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td>Widely used in various applications</td>
</tr>
<tr>
<td>MACROGOL 20</td>
<td>Polyols</td>
<td>Polyethylene glycol</td>
<td>p70 liquid, paste</td>
<td>-</td>
<td>Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td>Corresponding to the Japanese Pharmacopoeias &amp; Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
</tr>
<tr>
<td>SANNIX PL-2100</td>
<td>Polyols</td>
<td>Polyether polyol</td>
<td>p71 liquid</td>
<td>-</td>
<td>Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td>Excellent transparency/weather-, heat resistance</td>
</tr>
<tr>
<td>SANNIX GP-20</td>
<td>Polyols</td>
<td>Polyether polyol</td>
<td>p71 liquid</td>
<td>-</td>
<td>Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td>Excellent transparency/weather-, heat resistance</td>
</tr>
<tr>
<td>PRIMEPOL 20</td>
<td>Polyols</td>
<td>Polyether polyol</td>
<td>p71 liquid</td>
<td>-</td>
<td>Excellent transparency/weather-, heat resistance</td>
<td>Excellent transparency/weather-, heat resistance</td>
</tr>
<tr>
<td>CB-1 20</td>
<td>Polymers</td>
<td>Methacrylate/acrylates-based</td>
<td>Powder</td>
<td>-</td>
<td>Excellent molded shape retention property/imparting hardness to resulting ceramics</td>
<td>Ceramics binder for injection molding</td>
</tr>
<tr>
<td>SOFIC W-802</td>
<td>Polymers</td>
<td>Acrylates-based</td>
<td>Liquid</td>
<td>-</td>
<td>Excellent molded shape retention property/imparting hardness to resulting ceramics</td>
<td>Excellent molded shape retention property/imparting hardness to resulting ceramics</td>
</tr>
<tr>
<td>POLYQUID 20</td>
<td>Polymers</td>
<td>Methacrylic acid/ethyl acrylate copolymer</td>
<td>Liquid</td>
<td>-</td>
<td>Aqueous dispersion</td>
<td>Enteric-soluble coating agent/masking pungency/binder for matrices</td>
</tr>
<tr>
<td>POLYTHICK 20</td>
<td>Polymers</td>
<td>Methacrylate/acrylates-based</td>
<td>Liquid</td>
<td>-</td>
<td>Excellent transparency/weather-, heat resistance</td>
<td>Tackifier (pressure-sensitive adhesive)</td>
</tr>
<tr>
<td>HAIRROL UC-4</td>
<td>Polymers</td>
<td>Poly quarternary ammonium salt of isophoron diisocyanate, butylene glycol &amp; dihydroxy ethyl dimonium methyl sulfate</td>
<td>-</td>
<td>-</td>
<td>Providing ductile coating film to keep hair setting even at high temperature &amp; humidity</td>
<td>Raw material for hair-styling agents</td>
</tr>
<tr>
<td>PERMARIN 20</td>
<td>Polymers</td>
<td>Polyurethane</td>
<td>Liquid</td>
<td>-</td>
<td>Resulting coating film has excellent flexibility, water-, adhesion- &amp; chemical resistance</td>
<td>Resulting coating film has excellent flexibility, water-, adhesion- &amp; chemical resistance</td>
</tr>
<tr>
<td>CHEMITYLEN GA-50</td>
<td>Polymers</td>
<td>Polypropylene triol</td>
<td>Liquid</td>
<td>-</td>
<td>Sizing agent for glass fiber spinning &amp; warping during weaving of glass cloths</td>
<td>Sizing agent for glass fiber spinning &amp; warping during weaving of glass cloths</td>
</tr>
<tr>
<td>UCOAT 20</td>
<td>Polymers</td>
<td>Polyethylene</td>
<td>Liquid</td>
<td>-</td>
<td>Excellent resistance to yellowing, water- &amp; chemical-resistance, flexibility &amp; adhesion</td>
<td>Resistant to yellowing, water- &amp; chemical-resistance, flexibility &amp; adhesion</td>
</tr>
<tr>
<td>UPRENE UXA-307</td>
<td>Polymers</td>
<td>Polyquaternary ammonium salt of isophoron diisocyanate, butylene glycol &amp; dihydroxy ethyl dimonium methyl sulfate</td>
<td>Liquid</td>
<td>-</td>
<td>Excellent bonding for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td>Excellent bonding for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
</tr>
</tbody>
</table>

Continued on the next page
### Plasticizing/Softening

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECONOL LEBON TM-18, 18PA</strong></td>
<td>Ammonium salt-based cationic surfactants</td>
<td>Alkyltrimethylammonium chloride</td>
<td>p59</td>
<td>liquid, solid</td>
<td>• Imparting smoothness, pliability &amp; tenseness-stiffness finished feeling to hair &amp; hair conditioner &amp; treatment base</td>
<td>For hair conditioners</td>
</tr>
<tr>
<td><strong>CATION LQ</strong></td>
<td>Ethyl sulfuric acid lanolin fatty acid aminopropylethyl dimethylammonium</td>
<td>p59</td>
<td>paste</td>
<td>• Imparting excellent moisturizing, antistaticity &amp; tactility property to hair/long-lasting softness &amp; smoothness &amp; hair conditioner &amp; treatment base/shampoo with built-in conditioner</td>
<td>For adhesives &amp; flat finishes</td>
<td></td>
</tr>
<tr>
<td><strong>CATION DSV</strong></td>
<td>Distearidymethylammonium chloride</td>
<td>p59</td>
<td>flake</td>
<td>• Imparting excellent flexibility &amp; antistaticity to hair &amp; fibers &amp; hair conditioner &amp; treatment base/softener for fabrics</td>
<td>For anti-static coatings</td>
<td></td>
</tr>
<tr>
<td><strong>CATION SF</strong></td>
<td>Imidazolinium salt-based cationic surfactants</td>
<td>Imidazoline compound</td>
<td>p59</td>
<td>liquid to paste</td>
<td>• Imparting excellent flexibility, antistaticity &amp; water-absorbing effect &amp; hair conditioner &amp; treatment base/softener for fabrics</td>
<td>For softeners</td>
</tr>
<tr>
<td><strong>CATION G-50</strong></td>
<td>Benzalkonium chloride</td>
<td>p60</td>
<td>liquid</td>
<td>• Wide spectrum antibacterial activities &amp; germicide/detergent for food factory/germicide for industrial use &amp; hair conditioner &amp; treatment base</td>
<td>For antibacterial coatings</td>
<td></td>
</tr>
<tr>
<td><strong>CATION S</strong></td>
<td>Stearyldimethylbenzyl-ammonium chloride</td>
<td>p60</td>
<td>solid</td>
<td>• Imparting smoothness, pliability &amp; tenseness-stiffness finished feeling to hair &amp; hair conditioner &amp; treatment base</td>
<td>For hair conditioners &amp; anti-static coatings</td>
<td></td>
</tr>
<tr>
<td><strong>NEWPOL PE</strong></td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p63</td>
<td>liquid, flake, paste</td>
<td>• Low foaming property &amp; detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/gelling agent/binder/coating agent, etc.)/fiber treating agent (fabricant/dyeing agent/emulsifier/dispersant/solubilizer/antistatic agent</td>
<td>For adhesives &amp; coatings</td>
</tr>
</tbody>
</table>

To increase moldability to impart flexibility to make soft

Continued on the next page
## List by Performance (Function)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG-C</td>
<td></td>
<td>Glyceryl monostearate</td>
<td>p65</td>
<td>flake</td>
<td>• Softener, emulsifier, solubilizer, moisturizer &amp; oiliness improver for cosmetics, creams, lotions &amp; quasi drugs</td>
<td>• Lubricant &amp; stabilizer of sustained drug releasing agents, tablets, pills &amp; capsules of medicine</td>
</tr>
<tr>
<td>IONET S</td>
<td></td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65</td>
<td>liquid, granule</td>
<td>• SPAN type lipophilic surfactants derived from plants</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>IONET T</td>
<td>Ester-based nonionic surfactants</td>
<td>Polyoxylethylene sorbitan monofatty acid ester</td>
<td>p65</td>
<td>liquid</td>
<td>• Tween type hydrophilic surfactants derived from plants</td>
<td>• Viscosity modifier for coatings &amp; ink/leveling agent &amp; softener for fibers/lubricant/machining oil/moltenworking oil</td>
</tr>
<tr>
<td>POLYSORBATE 80</td>
<td></td>
<td>Modified sorbitan</td>
<td>-</td>
<td>liquid</td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>SANFLEX EB 200</td>
<td>Esters</td>
<td>Polyethyleneglycol dibenzoate</td>
<td>p67</td>
<td>liquid</td>
<td>• Inactive to isocyanate</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>SANFLEX SK-500, GPA-3000, SPX-80N, LBU-25</td>
<td>(Look at the page by composition)</td>
<td>Polyoxypolypropylene glycol diglycidyl ether</td>
<td>p67</td>
<td>liquid</td>
<td>• Imparting flexibility &amp; plasticity to resins</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>GLYCIALE PP</td>
<td>Epoxides</td>
<td>Polyoxypolypropylene glycol diglycidyl ether</td>
<td>p67</td>
<td>liquid</td>
<td>• Moderate hardness, low melt viscosity equivalent to polyethylene/compatible with polymer &amp; non-aqueous solvents &amp; solvents</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>SANWAX</td>
<td>Olefin-based compounds</td>
<td>Low-molecular-weight polyethylene</td>
<td>p68</td>
<td>powder, pellet, etc.</td>
<td>• Moderate hardness, low back pressure/compatible with polymer &amp; non-aqueous solvents &amp; solvents</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>VISCOL</td>
<td>Low-molecular-weight polypropylene</td>
<td>Low-molecular-weight polyethylene</td>
<td>p68</td>
<td>powder</td>
<td>• Moderate hardness, low melt viscosity equivalent to polyethylene/compatible with polymer &amp; non-aqueous solvents &amp; solvents</td>
<td>• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/defoaming agent</td>
</tr>
<tr>
<td>DSA, PDSA-DA</td>
<td>Acids/Acid Anhydrides</td>
<td>Alkenyl succinic anhydride</td>
<td>p69</td>
<td>liquid</td>
<td>• Imparting long-term reliability, excellent electrical insulating property, flexibility &amp; bending strength to resins</td>
<td>• Epoxy curing agent/rust preventive/corrosion inhibitor</td>
</tr>
<tr>
<td>SANAMEEL TAP</td>
<td>Nitrogen-Containing Compounds</td>
<td>Polyetheramine</td>
<td>-</td>
<td>liquid</td>
<td>• Low viscosity/high reactivity</td>
<td>• Epoxy resin curing agent/raw material for epoxy resin emulsion</td>
</tr>
<tr>
<td>PEG</td>
<td></td>
<td>Polyethylene glycol</td>
<td>p70</td>
<td>liquid, wax, paste, flake, powder</td>
<td>• Low viscosity/high reactivity</td>
<td>• Epoxy resin curing agent/raw material for epoxy resin emulsion</td>
</tr>
<tr>
<td>MACROGOL</td>
<td>Polyols</td>
<td>Polyethylene glycol</td>
<td>p70</td>
<td>liquid, wax, paste, flake, powder</td>
<td>• Compatible with skin/water-soluble &amp; retained/non-volatile/free from greasiness</td>
<td>• Epoxy resin curing agent/raw material for epoxy resin emulsion</td>
</tr>
<tr>
<td>SANNIX GP, GH</td>
<td></td>
<td>Polyoxypolypropylene triol</td>
<td>p71</td>
<td>liquid</td>
<td>• Offering a wide selection of molecular weight</td>
<td>• Epoxy resin curing agent/raw material for epoxy resin emulsion</td>
</tr>
</tbody>
</table>

---

List by Performance (Function) Continued on the next page **
## Viscosity Controlling

To thicken/to prevent sagging/to increase liquidity/to reduce the variation of viscosity with temperature

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANNIX PL-2100</td>
<td>Polys</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p70</td>
<td>liquid</td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX PP, TP-400</td>
<td>Polys</td>
<td>Polyoxypropylene glycol/Trimethylpropane-based polyether polyl</td>
<td>p71</td>
<td>liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEWPOL BP</td>
<td>Polys</td>
<td>Bisphenol A-propylene oxide adduct</td>
<td>p70</td>
<td>liquid</td>
<td>• Resulting resin has excellent corrosion resistance &amp; flexibility</td>
<td></td>
</tr>
<tr>
<td>NEWPOL BPE</td>
<td>Polys</td>
<td>Bisphenol A-ethylene oxide adduct</td>
<td>p70</td>
<td>liquid, block, etc.</td>
<td>• Raw material for resins, organic-intermediate/modifier for resin</td>
<td></td>
</tr>
<tr>
<td>PRIMEPOL</td>
<td>Polys</td>
<td>Polyoxypropylene glycol or triol</td>
<td>p71</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %/compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td>MELPOL F-220</td>
<td>Polys</td>
<td>Isocyanate modified polyether</td>
<td>-</td>
<td>pellet</td>
<td>• Aqueous solution has surface activating ability/forming flexible &amp; elastic film</td>
<td></td>
</tr>
<tr>
<td>METHACRYLATE</td>
<td>Methacrylate/Acrylate-based</td>
<td>Long-chain alkyl methacrylate or dialkylaminomethyl methacrylate derivatives</td>
<td>p73</td>
<td>liquid</td>
<td>• Decomposing thermally at relatively low temperature &amp; hardly-leaving ash after incineration</td>
<td></td>
</tr>
<tr>
<td>PERMARIN</td>
<td>Urethane series</td>
<td>Polyurethane emulsion</td>
<td>p74</td>
<td>liquid</td>
<td>• Resulting coating film has excellent flexibility, water- &amp; chemical resistance</td>
<td></td>
</tr>
<tr>
<td>UCOAT</td>
<td>Urethane series</td>
<td>-</td>
<td>p74</td>
<td>liquid</td>
<td>• Raw material for coatings, inks &amp; adhesives/binder for pigment printing</td>
<td></td>
</tr>
<tr>
<td>SST-1</td>
<td>Urethane modified polyether</td>
<td>-</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %/compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td>SANNIX PP-2100</td>
<td>Polys</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p70</td>
<td>liquid</td>
<td>• Softener to finish leather in the production of artificial or synthetic leather</td>
<td></td>
</tr>
<tr>
<td>SANNIX PP, TP-400</td>
<td>Polys</td>
<td>Polyoxypropylene glycol/Trimethylpropane-based polyether polyl</td>
<td>p71</td>
<td>liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEWPOL BP</td>
<td>Polys</td>
<td>Bisphenol A-propylene oxide adduct</td>
<td>p70</td>
<td>liquid</td>
<td>• Resulting resin has excellent corrosion resistance &amp; flexibility</td>
<td></td>
</tr>
<tr>
<td>NEWPOL BPE</td>
<td>Polys</td>
<td>Bisphenol A-ethylene oxide adduct</td>
<td>p70</td>
<td>liquid, block, etc.</td>
<td>• Raw material for resins, organic-intermediate/modifier for resin</td>
<td></td>
</tr>
<tr>
<td>PRIMEPOL</td>
<td>Polys</td>
<td>Polyoxypropylene glycol or triol</td>
<td>p71</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %/compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td>MELPOL F-220</td>
<td>Polys</td>
<td>Isocyanate modified polyether</td>
<td>-</td>
<td>pellet</td>
<td>• Aqueous solution has surface activating ability/forming flexible &amp; elastic film</td>
<td></td>
</tr>
<tr>
<td>METHACRYLATE</td>
<td>Methacrylate/Acrylate-based</td>
<td>Long-chain alkyl methacrylate or dialkylaminomethyl methacrylate derivatives</td>
<td>p73</td>
<td>liquid</td>
<td>• Decomposing thermally at relatively low temperature &amp; hardly-leaving ash after incineration</td>
<td></td>
</tr>
<tr>
<td>PERMARIN</td>
<td>Urethane series</td>
<td>Polyurethane emulsion</td>
<td>p74</td>
<td>liquid</td>
<td>• Resulting coating film has excellent flexibility, water- &amp; chemical resistance</td>
<td></td>
</tr>
<tr>
<td>UCOAT</td>
<td>Urethane series</td>
<td>-</td>
<td>p74</td>
<td>liquid</td>
<td>• Raw material for coatings, inks &amp; adhesives/binder for pigment printing</td>
<td></td>
</tr>
<tr>
<td>SST-1</td>
<td>Urethane modified polyether</td>
<td>-</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %/compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td>Product Name</td>
<td>Composition Classification</td>
<td>Principal Component</td>
<td>Page</td>
<td>Form (20±5°C)</td>
<td>Uses &amp; Features (of all functions)</td>
<td>Major Applications</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------</td>
<td>------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| NEWDET PE-85      | Ether-based nonionic surfactants | Polyoxyethylene polyoxypropylene glycol                 | p63  | petrolatum jelly | • Corresponding to Japanese Pharmaceutical Excipients  
• Pharmaceutical excipients (solubilizer for liquid medicine/stabilizer/wetting agent for sintering/  
  suppository base/softening agent for tablets/coating agent)  
• Clearing agent for medical equipment                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| NEWPOL PE         | Ether-based nonionic surfactants | Polyoxyethylene polyoxypropylene glycol                 | p63  | liquid, flake, paste         | • Low foaming property  
• Detergent base/detergent/raw-material for quasi-drugs (wetting agent/solubilizer/  
  gelling agent/binder/coating agent, etc.)/rubber treating agent (lubricant/designing  
  agent/emulsifier/dispersant/solubilizer/artificial agent)                                                                                                                  |                                                                                                                                                                                                                                      |
| EMULMIN LS, NL, L | Ester-based nonionic surfactants | Polyoxyethylenolauril ether derived from natural higher  | p64  | liquid, solid to paste | • Hardly hydrolized even in the presence of acidity or alkalinity  
• Detergent/emulsifier for creams/lotions/solubilizer/gelling agent/dispersant  
• EMULMIN NL, L can be emulsifiers for emulsion polymerization                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                      |
| NEWPOL 50HB, 75H-90000, LB, NSQ, V | Ether-based nonionic surfactants | Polyoxyethylene lauryl glycol                          | p61  | paste         | • Alkaneol derivative of dodecanol in which about 1 mol ethylene oxide is adducted in average  
• Low irritancy to eyes & skin  
• Antibacterial-, antifungal-, thickening agent for hair shampoos, conditioners, cosmetics  
  & detergents                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                      |
| NEWPOL GEP-2800, TL | Ether-based nonionic surfactants | (Look at the page by composition) Polyoxyethylene di  | p62  | liquid         | • Offering a wide selection from water-soluble to insoluble products  
• Wetting agent, moisturizer & viscosity controller for cosmetics/releasesing lubricant/lubricant for  
  machinery, metals & fabrics/foaming agent/raw materials for lubricant, hydraulic oils/  
  quenching oil for machinery & metals/emulsion-breaker/heat-exchanger                                           |                                                                                                                                                                                                                                      |
| VISRIZER AP-2     | Ether-based nonionic surfactants | Modified polyether type resin                          | p63  | liquid         | • Excellent lubricating effect to skin & hair  
• Wetting agent, moisturizer & viscosity modifier for cosmetics/foaming agent                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                      |
| EMULMIN 862       | Ether-based nonionic surfactants | Polyoxyethylene diesterate                             | p64  | powder         | • Thickener, gelling agent for cosmetics, shampoos & hair conditioners  
• SPAN type lipophilic surfactants derived from plants  
• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/foaming agent  
• Viscosity modifier for coatings & ink/levelling agent & softener for fibers/lubricant/  
  machining oil/metalworking oil  
• TWEEN type hydrophobic surfactants derived from plants  
• Emulsifier/dispersant/wettability modifier/rust inhibitor/solubilizer/levelling agent & softener for fibers/lubricant/metalworking oil  
• Plasticizer for enteric-soluble coating agents, etc./ointment bases/viscosity modifier for  
  coatings & ink  
• Derived from plant/so animal ingredients nor genetically-modified ingredients  
  (For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/  
  thickener/dispersant/binder/base material/auxiliary disintegrant)  
• Corresponding to the pharmacopoeias (JP, USP/NF, EP)  
  (Exclusively used in medical drug manufacturing/medical drug for exclusive use in  
  manufacturing)                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                      |
| IONET S           | Ester-based nonionic surfactants | Sorbitan mono- or di-fatty acid ester                 | p65  | liquid, granule | • Moderate hardness, low melt viscosity equivalent to polyethylene/incompatible with polymers  
• Excluding polyolefins/or cosmetics/abrasives/anti-sagging agents/binder for ink/pigments,  
  filler dispersants/improver for flowability, softening point, abrasion-resistance & releasability/  
  flatting agent/lubricant/fixing agent for agrichemicals  
• Moderate hardness, low melt viscosity equivalent to polypropylene/incompatible with polymers  
  excepting polyolefins/or abrasives/anti-sagging agents/binder for ink/pigment, filler  
  dispersants/releasing agent for toner/improver for flowability, releasability, softening point &  
  abrasion-resistance/flatting agent/lubricant                                                                                                                                  |                                                                                                                                                                                                                                      |
| IONET T           | Ester-based nonionic surfactants | Polyoxyethylene sorbitan monofatty acid ester           | p65  | liquid         | • Derived from plant/so animal ingredients nor genetically-modified ingredients  
  (For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/  
  thickener/dispersant/binder/base material/auxiliary disintegrant)  
• Corresponding to the pharmacopoeias (JP, USP/NF, EP)  
  (Exclusively used in medical drug manufacturing/medical drug for exclusive use in  
  manufacturing)                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                      |
| POLYSORBATE 80    |                        | Modified sorbitan                                       | p64  | liquid         | • Moderate hardness, low melt viscosity equivalent to polyethylene/incompatible with polymers  
• Excluding polyolefins/or cosmetics/abrasives/anti-sagging agents/binder for ink/pigments,  
  filler dispersants/improver for flowability, softening point, abrasion-resistance & releasability/  
  flatting agent/lubricant/fixing agent for agrichemicals  
• Moderate hardness, low melt viscosity equivalent to polypropylene/incompatible with polymers  
  excepting polyolefins/or abrasives/anti-sagging agents/binder for ink/pigment, filler  
  dispersants/releasing agent for toner/improver for flowability, releasability, softening point &  
  abrasion-resistance/flatting agent/lubricant                                                                                                                                  |                                                                                                                                                                                                                                      |
| SANWAX            | Olefin-based compounds       | Low-molecular-weight polyethylene                      | p68  | powder, pellet, etc. | • Moderate hardness, low melt viscosity equivalent to polyethylene/incompatible with polymers  
• Excluding polyolefins/or cosmetics/abrasives/anti-sagging agents/binder for ink/pigments,  
  filler dispersants/improver for flowability, softening point, abrasion-resistance & releasability/  
  flatting agent/lubricant/fixing agent for agrichemicals  
• Moderate hardness, low melt viscosity equivalent to polypropylene/incompatible with polymers  
  excepting polyolefins/or abrasives/anti-sagging agents/binder for ink/pigment, filler  
  dispersants/releasing agent for toner/improver for flowability, releasability, softening point &  
  abrasion-resistance/flatting agent/lubricant  
• Anti-sagging agent for coatings                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                      |
| VISCOL            | Olefin-based compounds       | Low-molecular-weight polypropylene                     | p68  | powder         | • Anti-sagging agent for coatings                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                      |
| DSA, PDSA-DA      | Acids/Acid Anhydrides        | Alkenyl succinic anhydride                             | p69  | liquid         | • Importing long pot life, excellent electrical insulating property, flexibility & bending  
  strength to resins  
• Epoxy curing agent/rust preventive/corrosion inhibitor  
• Anti-sagging agent for coatings                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                      |
| SANTHIXO 5001     | Nitrogen-Containing Compounds | Higher fatty acid bisamide                            | p69  | paste         | • Anti-sagging agent for coatings                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                      |
### Antistatic

1. **PELESTAT**
   - **Composition Classification**: Polyethylene glycol
   - **Principal Component**: Liquid, wax, paste, flake, powder
   - **Form (20±5°C)**: p70
   - **Uses & Features**: Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness.
   - **Major Applications**: Widely used in various applications.

2. **MACROGOL**
   - **Composition Classification**: Methacrylate copolymer & refined mineral oil
   - **Principal Component**: Liquid, flake, powder, paste
   - **Form (20±5°C)**: p70
   - **Uses & Features**: Contributing to a reduction of fuel consumption to reduce the viscosity of lubricant depending on temperature.
   - **Major Applications**: Corresponding to the Japanese Pharmacopoeias & Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing).

3. **ACLUBE**
   - **Composition Classification**: Methacrylate/Acrylate-based
   - **Principal Component**: Water soluble acrylic polymer
   - **Form (20±5°C)**: - powder
   - **Uses & Features**: Contributing to a reduction of fuel consumption to reduce the viscosity of lubricant depending on temperature.
   - **Major Applications**: Corresponding to the Japanese Pharmacopoeias & Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing).

4. **SANDEWAX**
   - **Composition Classification**: Higher alkyl acrylate polymer
   - **Principal Component**: Solid
   - **Form (20±5°C)**: - solid
   - **Uses & Features**: Improving filtering speed.
   - **Major Applications**: Improving filtering speed.

5. **SANFRESH**
   - **Composition Classification**: Cross-linked acrylic acid polymer sodium salt
   - **Principal Component**: Solid
   - **Form (20±5°C)**: p72 powder
   - **Uses & Features**: Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness.
   - **Major Applications**: Widely used in various applications.

### Viscosity Controlling

#### For fuel-saving engine oils

- **Product Name**: PELESTAT
- **Composition Classification**: Polyethylene glycol
- **Principal Component**: Liquid, wax, paste, flake, powder
- **Form (20±5°C)**: p70
- **Uses & Features**: Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness.
- **Major Applications**: Widely used in various applications.

#### For protective films

- **Product Name**: MACROGOL
- **Composition Classification**: Methacrylate copolymer & refined mineral oil
- **Principal Component**: Liquid, flake, powder, paste
- **Form (20±5°C)**: p70
- **Uses & Features**: Contributing to a reduction of fuel consumption to reduce the viscosity of lubricant depending on temperature.
- **Major Applications**: Corresponding to the Japanese Pharmacopoeias & Pharmaceutical Excipients (Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing).

#### To avoid accumulating static electricity and dust

To prevent malfunction or trouble due to static electricity.

### Antistatic

1. **PELESTAT**
   - **Composition Classification**: Olefin or Nylon-based compounds
   - **Principal Component**: Proprietary block copolymer
   - **Form (20±5°C)**: - pellet
   - **Uses & Features**: Imparting long-lasting excellent antistatic property independent of humidity.
   - **Major Applications**: Permanent antistatic agent for resins (preventing dust adhesion & troubles by static electricity, destruction of electronic circuit, electric shock & appliance malfunctions, etc.).

2. **CHEMISTAT**
   - **Composition Classification**: Anionic or nonionic surfactants
   - **Principal Component**: Proprietary nonionic surfactant
   - **Form (20±5°C)**: - liquid, powder, etc.
   - **Uses & Features**: Antistatic agent for synthetic resins.
   - **Major Applications**: Offering coating, kneading or reactive type.

3. **SANSTAT 2012A**
   - **Composition Classification**: Cationic surfactants
   - **Principal Component**: Proprietary cationic surfactant
   - **Form (20±5°C)**: - liquid
   - **Uses & Features**: Coating type antistatic agent for synthetic resins.
   - **Major Applications**: Coating type antistatic agent for synthetic resins.

4. **ECONOL LEBON TM-18, 18PA**
   - **Composition Classification**: Ammonium salt-based cationic surfactants
   - **Principal Component**: Alkyltrimethylammonium chloride
   - **Form (20±5°C)**: p59 liquid, solid
   - **Uses & Features**: Imparting smoothness, pliability & tenseness-stiffness finished feeling to hair.
   - **Major Applications**: Hair conditioner & treatment base.

5. **CATION DSV**
   - **Composition Classification**: Distearidylmethlammonium chloride
   - **Principal Component**: Liquid
   - **Form (20±5°C)**: p59
   - **Uses & Features**: Imparting excellent flexibility & antistaticity to hair and fibers.
   - **Major Applications**: Hair conditioner & treatment base/softener for fabrics.

6. **CATION LQ**
   - **Composition Classification**: Ethyl sulfonic acid lanolin fatty acid amineopropylethyl dimethylammonium
   - **Principal Component**: Paste
   - **Form (20±5°C)**: p59
   - **Uses & Features**: Imparting excellent moisturizing, antistaticity & tactile property to hair/long-lasting softness & smoothness.
   - **Major Applications**: In Japan, CATION LQ is approved for an exclusive use in cosmetics.

7. **CATION SF**
   - **Composition Classification**: Imidazolinum salt-based cationic surfactants
   - **Principal Component**: Imidazoline compound
   - **Form (20±5°C)**: Liquid to paste
   - **Uses & Features**: Imparting excellent flexibility, antistaticity & water-absorbing effect.
   - **Major Applications**: Softener for fabrics.

8. **CATION S**
   - **Composition Classification**: Benzalkonium-based cationic surfactants
   - **Principal Component**: Stearyldimethylbenzy1-ammonium chloride
   - **Form (20±5°C)**: p60 solid
   - **Uses & Features**: Imparting smoothness, pliability & tenseness-stiffness finished feeling to hair.
   - **Major Applications**: Hair conditioner & treatment base.

### Additional Information

- **URL**: https://www.sanyo-chemical.co.jp/eng
- **E-mail**: sanyoproduct@sanyo-chemical.group
- **Fax**: +81-3-3245-1697
- **Tel**: +81-3-5200-3400

Continued on the next page...
### 14 Electrical Conductive

**Uses & Features (of all functions)**
- Low foaming property
- Detergent base/detergent/raw material for quasi-drugs (wetting agent/solubilizer/ gelling agent/blinder/coating agent, etc.)/fiber treating agent (lubricant/desizing agent)/ emulsifier/dispersant/solubilizer/antistatic agent

**Major Applications**
- For aluminum electrolytic capacitors

### 15 Water Absorbent/Water Retentive

**Uses & Features (of all functions)**
- Significant high degree of ionic dissociation/high electric conductivity
- High durability (less temperature-dependency of electric conductivity)
- Electrolyte for aluminum electrolytic capacitors

**Major Applications**
- Absorb several hundred times its own weight of water
- For cat litters

---

### List by Performance (Function)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANELEK</td>
<td>Nitrogen-Containing Compounds</td>
<td>Amidine based electrolyte</td>
<td>-</td>
<td>liquid</td>
<td>• Significant high degree of ionic dissociation/high electric conductivity&lt;br&gt;• High durability (less temperature-dependency of electric conductivity)&lt;br&gt;• Electrolyte for aluminum electrolytic capacitors</td>
<td></td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>p63</td>
<td>liquid, flake, paste</td>
<td>• Low foaming property&lt;br&gt;• Detergent base/detergent/raw material for quasi-drugs (wetting agent/solubilizer/ gelling agent/blinder/coating agent, etc.)/fiber treating agent (lubricant/desizing agent)/ emulsifier/dispersant/solubilizer/antistatic agent</td>
<td></td>
</tr>
<tr>
<td>SIPA, SIPE-40L, SIPM</td>
<td>Sodium-5-sulphoaliphatic acid/ Ethylene glycol solution of 1,3-Benzendicarboxylic acid, 5-sulfo- , 1-3 bis (2-hydroxyethyl) esters, monosodium salts/ 5-Sodium sulfo dimethyl isophthalate</td>
<td>-</td>
<td>p68/p69</td>
<td>granule, liquid, powder</td>
<td>• Imparting cationic dyability, hydrophilicity &amp; antistatic property to polymers such as polyester, polyurethane &amp; polylamids&lt;br&gt;• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness&lt;br&gt;• Low acute toxicity/low irritancy to eyes &amp; skins&lt;br&gt;• Widely used in various applications</td>
<td></td>
</tr>
<tr>
<td>PEG</td>
<td>Polylols</td>
<td>Polyethylene glycol</td>
<td>p70</td>
<td>liquid, wax, paste, flake, powder</td>
<td>• Low foaming property&lt;br&gt;• Detergent base/detergent/raw material for quasi-drugs (wetting agent/solubilizer/ gelling agent/blinder/coating agent, etc.)/fiber treating agent (lubricant/desizing agent)/ emulsifier/dispersant/solubilizer/antistatic agent</td>
<td></td>
</tr>
<tr>
<td>SACRIS</td>
<td>Methacrylate/Acrylate-based</td>
<td>Water soluble acrylic polymer (ultrahigh molecular weight)</td>
<td>p72</td>
<td>powder</td>
<td>• Aggregated spherical particles of superabsorbent polymers&lt;br&gt;• Water absorbing agent/hygroscopic agent/anti-dew material/water-retention agent/ gelling agent/thickener</td>
<td></td>
</tr>
<tr>
<td>AQUAPEarl</td>
<td>Cross-linked acrylic acid polymer sodium salt</td>
<td>-</td>
<td>p72</td>
<td>powder</td>
<td>• Aggregated spherical particles of superabsorbent polymers&lt;br&gt;• Water absorbing agent/hygroscopic agent/anti-dew material/water-retention agent/ gelling agent/thickener</td>
<td></td>
</tr>
<tr>
<td>SANWET IM</td>
<td>Methacrylate/Acrylate-based</td>
<td>(SANWET IM: Starch/Acrylic acid graft copolymer sodium salt)</td>
<td>p72</td>
<td>powder</td>
<td>• Crushed particulate superabsorbent polymer/high water-absorbing, retentivity&lt;br&gt;• Corresponding to Japanese Pharmaceutical Excipients&lt;br&gt;• Thickener, gelling, absorbing agent for wound dressing, under pads, poultices or other supplies for medical use</td>
<td></td>
</tr>
<tr>
<td>SANFRESH</td>
<td>Methacrylate/Acrylate-based</td>
<td>Cross-linked acrylic acid polymer sodium salt</td>
<td>-</td>
<td>sheet</td>
<td>• Seeding sheet for reducing soil of nursery beds</td>
<td></td>
</tr>
<tr>
<td>SANYO SEEDBED</td>
<td>Methacrylate/Acrylate-based</td>
<td>Cross-linked acrylic acid polymer sodium salt</td>
<td>-</td>
<td>sheet</td>
<td>• Seeding sheet for reducing soil of nursery beds</td>
<td></td>
</tr>
</tbody>
</table>
### Sealing/Waterproofing

Sealing/Waterproofing to prevent the passage or entry of water

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| SANNIX PRIMEPOL| Polyols                            | Proprietary polymer polyl or polymer polyl | p69  p70  p71 | liquid        | • PRIMEPOL has excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol% compatible water resistant which is a conflicting performance  
• Raw material for polyurethane foam & resins (e.g. adhesives, coatings, elastomers & sealants) | For waterproofing for roofs                |
| SACRIS         | Methacrylate/Acrylate-based         | Water soluble acrylic polymer (ultrahigh molecular weight) | -     | powder        | • Offering anionic, cationic & amphoteric polymer  
• Thicker/ginging agent/floculant/wastewater treatment/sizing agent in paper making/  
sealant/exipient for dehumidifiers/slugd solidifying agent/seed binder for slope greening/  
soil modifier | For sealants                              |
| SANFRESH       | Cross-linked acrylic acid polymer sodium salt | -     | powder    | • Crushed particulate superabsorbent polymer  
• Water absorbent & retention agent (soil conditioners/seedbeds/portable toilets/  
dog toilet sheets/gel-type air fresheners/under pads/disposable body warmers/additive for  
cosmetics & medical use/thickener/ice packs | For waterproofing for roofs                |
| CHEMIGUARD     | Urethane series                    | Urethane prepolymers, solution | -     | liquid, paste | • Water-swellable sealant  
• CHEMIGUARD THINNER is also lined up as a diluent | For heat insulators of refrigerators       |
| DOUBLE COAT S  | Epoxides                           | Two-component type (main and curing agent) of reactive polymer | -     | emulsion, powder | • Forming a water-proof layer with excellent durability & chemical resistance  
• Excellent adhesion & workability  
• Permeable coating agent for water-proofing concrete | For sealants                              |

### Cold or Heat Insulating

Cold or Heat Insulating to keep cold/to prevent heat transmission to store heat

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| NEWPOL 50HB, 75H-90000, LB, NSQ, V | Ether-based nonionic surfactants (Look at the page by composition) | -     | liquid     | • Offering a wide selection from water-soluble to insoluble products  
• Wetting agent, moisturizer & viscosity controller for cosmetics/releasing lubricant/lubricant for machinery, metals & fabrics/detoxifying agent/raw materials for lubricant, hydraulic oils/  
quenching oil for machinery & metals/emulsion-breaker/heating-medium | For heat insulators of refrigerators       |
| PEG            | Polyols                            | Polyethylene glycol | p70    | liquid, wax, paste, flake, powder | • Compatible with skin/water-soluble & -retainable/non-volatile/free from greasiness  
• Low acute toxicity/low irritancy to eyes & skin  
• Widely used in various applications | For sealants                              |
| SANNIX PRIMEPOL| Polyols                            | Proprietary polymer polyl or polymer polyl | p69  p70  p71 | liquid        | • PRIMEPOL has excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol% compatible water resistant which is a conflicting performance  
• Raw material for polyurethane foam & resins (e.g. adhesives, coatings, elastomers & sealants) | For heat insulators for houses             |
| SANFRESH       | Cross-linked acrylic acid polymer sodium salt | -     | powder    | • Crushed particulate superabsorbent polymer  
• Water absorbent & retention agent (soil conditioners/seedbeds/portable toilets/  
dog toilet sheets/gel-type air fresheners/under pads/disposable body warmers/additive for  
cosmetics & medical use/thickener/ice packs | For heat insulators of refrigerators       |

### Antibacterial

Antibacterial to destroy bacteria or suppress their growth

As for the antibacterial agents for drugs or quasi-drugs use, please contact to our Sales & Marketing Dept.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| OSMORIN DA-50  | Ammonium salt-based cationic surfactants | Didecyldimethylammonium adipate | p59    | liquid        | • Halogen-free  
• Germicide for industrial use (food factory, fiber processing), detergent for food factory/wood &  
metal-cleaning bath preservative | For disinfectants                       |
| CATION DDC     | Didecyldimethylammonium chloride   | -                  | liquid |               | • Wide spectrum antibacterial activities  
• Germicide, detergent for food factory/slime- & algae-controlling agent/wood preservation/  
antifungal for coating | For disinfectants                       |

Continued on the next page...
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEBON TM-16, TM-16MS</td>
<td>Ammonium salt-based cationic surfactants</td>
<td>Cetyltrimethylammonium-chloride, -methyl sulfate</td>
<td>p59</td>
<td>liquid</td>
<td>• Having antibacterial &amp; antifungal effect even at low concentration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• For industrial use such as germicides for food factory, public facilities/lime control of coolant/antibacterial treatment for fibers/hygiene coatings/wood preservation</td>
<td></td>
</tr>
<tr>
<td>CATION G-50</td>
<td>Benzalkonium-based cationic surfactants</td>
<td>Benzalkonium chloride</td>
<td>p60</td>
<td>liquid</td>
<td>• Wide spectrum antibacterial activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Germicide, detergent for food factory/germicide for industrial use</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Hair conditioner &amp; treatment base</td>
<td></td>
</tr>
<tr>
<td>LEBON S, T-2</td>
<td>Amino acid-type amphoteric surfactants</td>
<td>Decylaminomethylaminomethyl-glycine/Alkylaminomethyl-glycine hydrochloride</td>
<td>p66</td>
<td>liquid, solid</td>
<td>• Wide spectrum antibacterial activities/little deterioration of germicidal activity even in the presence of proteins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Lower oral toxicity &amp; skin irritancy compared to cationic antibacterial agents</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Germicides &amp; detergents for food factory (industrial use)</td>
<td></td>
</tr>
<tr>
<td>NEWPOL DDE-10</td>
<td>Ether-based nonionic surfactants</td>
<td>Polyoxylethylene lauryl glycol</td>
<td>p61</td>
<td>paste</td>
<td>• Akanelol derivative of deoxycaneol in which about 1 mol ethylene oxide is adducted in average</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Low irritancy to eyes &amp; skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Antibacterial-, antifungal-, thickening agent for hair shampoos, conditioners, cosmetics &amp; detergents</td>
<td></td>
</tr>
<tr>
<td>NEWPOL EFP</td>
<td>Ether-based nonionic surfactants</td>
<td>Phenoxylethanol</td>
<td>p61</td>
<td>liquid</td>
<td>• Excellent solubility of fats &amp; oils</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Solvent of cosmetics, detergents/preservative for cosmetics</td>
<td></td>
</tr>
</tbody>
</table>

### Rust Preventive

To avoid rusting:

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGHCLEAN</td>
<td>Anionic surfactants</td>
<td>Compound of lubricant &amp; proprietary antibacterial surfactant</td>
<td>-</td>
<td>liquid</td>
<td>• Chlorine free</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Importing excellent cutting processability/anti-septicity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Water-soluble cutting oil</td>
<td></td>
</tr>
<tr>
<td>SANHIBITOR</td>
<td>Anionic or nonionic surfactants</td>
<td>Proprietary anionic or nonionic surfactant</td>
<td>-</td>
<td>liquid, paste</td>
<td>• Rust inhibitor for machinery &amp; metals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFAN</td>
<td>Amide-based nonionic surfactants</td>
<td>Alkyl amide based surfactants</td>
<td>p60</td>
<td>liquid, solid, flake</td>
<td>• Foaming agent, foam stabilizer, &amp; thickener enhancer for shampoos, liquid detergents &amp; bactericidal detergent/rust preventive</td>
<td></td>
</tr>
<tr>
<td>IONET S</td>
<td>Ester-based nonionic surfactants</td>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>p65</td>
<td>liquid, granule</td>
<td>• SPAN type lipophilic surfactants derived from plants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Emulsifier/dispersant/viscosity modifier/rust inhibitor/solubilizer/foaming agent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Viscosity modifier for coatings &amp; ink/novaling agent &amp; softener for fibers/lubricant/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>machining oil/metalworking oil</td>
<td></td>
</tr>
<tr>
<td>IONET T</td>
<td>Ester-based nonionic surfactants</td>
<td>Polyoxylethylene sorbitan monofatty acid ester</td>
<td>p65</td>
<td>liquid</td>
<td>• TWEEEN type hydrophilic surfactants derived from plants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Emulsifier/dispersant/viscosity modifier/rust inhibitor/solubilizer/levelling agent &amp; softener for fibers/lubricant/machining oil/metalworking oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Plasticizer for enteric-soluble coating agents, etc./ointment bases/viscosity modifier for coatings &amp; ink</td>
<td></td>
</tr>
<tr>
<td>DSA, PDSA-DA</td>
<td>Acids/Acid Anhydrides</td>
<td>Alkenyl succinic anhydride</td>
<td>p69</td>
<td>liquid</td>
<td>• Imparting long pot life, excellent electrical insulating property, flexibility &amp; bending strength to resins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Epoxy curing agent/rust preventive/corrosion inhibitor</td>
<td></td>
</tr>
<tr>
<td>POLYMIDE L</td>
<td>Nitrogen-Containing Compounds</td>
<td>Polyamidamine</td>
<td>p69</td>
<td>liquid</td>
<td>• Cured epoxy resin has rust prevention, excellent adhesion, toughness &amp; flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Curing agent for epoxy resin used to coatings, adhesives, civil engineering &amp; construction, laminating &amp; casting materials, etc.</td>
<td></td>
</tr>
<tr>
<td>BFA-3</td>
<td>Non-disclosure</td>
<td>Proprietary compound</td>
<td>-</td>
<td>liquid</td>
<td>• Imparting antioxidative &amp; rust inhibiting properties</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Additive for brake fluids</td>
<td></td>
</tr>
</tbody>
</table>
### Deterioration Preventive

**Product Name** | **Composition Classification** | **Principal Component** | **Page** | **Form (20±5°C)** | **Uses & Features (of all functions)** | **Major Applications**
--- | --- | --- | --- | --- | --- | ---
BFA-3 | Non-disclosure | Proprietary compound | - | liquid | • Imparting antioxidative & rust inhibiting properties  
• Additive for brake fluids |  

TENKAIZAI Y-24 | Polyols | Phosphorus-containing polyol | - | liquid | • Less deterioration of flame-retardant with time (low bleed-out property) because of the active hydrogen group to react isocyanate  
• Flame-retardant for rigid polyurethane foam |  

**Other Functions**

**Product Name** | **Composition Classification** | **Principal Component** | **Page** | **Form (20±5°C)** | **Uses & Features (of all functions)** | **Major Applications**
--- | --- | --- | --- | --- | --- | ---
SERABON DH-505 | Anionic surfactants | Proprietary anionic surfactant | - | liquid | • Dehydration promoting agent for metal sulfide concentration |  

---

Beside, our subsidiary & affiliate, San-Apro Ltd. also provides related products (p91)
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOXANON</td>
<td>Polycarboxylate</td>
<td>Excipient</td>
<td>-</td>
<td>liquid</td>
<td>• Imparting excellent spreading property to agrichemical granules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Excellent binding property/enhancing hardness of granules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Dispersant &amp; binder for agrichemical granules</td>
<td></td>
</tr>
<tr>
<td>SANMORIN OT</td>
<td>Sodium diocyl sulfosuccinate</td>
<td>Excipient</td>
<td>p57</td>
<td>liquid</td>
<td>• Particularly excellent penetrating property among surfactants/excellent wettability to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>hydrophilic materials/wetting &amp; penetrating agent/dispersant &amp; binder for granules/penetrating</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>agent for agrichemical spreading/dispersant/emulsifier for emulsion polymerization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Suitable for aqueous (water-soluble, emulsion) coatings</td>
<td></td>
</tr>
<tr>
<td>NEWDET PE-85</td>
<td>Polyoxyethylene</td>
<td>Excipient</td>
<td>p63</td>
<td>petroleum jelly</td>
<td>• Corresponding to Japanese Pharmaceutical Excipients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>polyoxypropylene glycol</td>
<td></td>
<td></td>
<td></td>
<td>• Pharmaceutical excipients (solubilizer/lubricant/wetting agent for ointment/suppository base/)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Clearing agent for medical equipment</td>
<td></td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td>Polypropylene glycol</td>
<td>Synthesis,</td>
<td>p63</td>
<td>liquid, flake,</td>
<td>• Low foaming property</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excipient</td>
<td></td>
<td>paste</td>
<td>• Detergent base/dettagent/raw-material for quasi-drugs (wetting agent/solubilizer/)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Wetting agent, moisturizer &amp; viscosity controller for cosmetics/leasing lubricant/lubricant for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>machinery, metals &amp; fabrics/defoaming agent/raw materials for lubricant, hydraulic oils/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>quenching oil for machinery &amp; metals/emulsion-breaker/heating-medium</td>
<td></td>
</tr>
<tr>
<td>NEWPOL 50HB,</td>
<td>Polyols</td>
<td>Synthesis,</td>
<td>p62</td>
<td>liquid, flake,</td>
<td>Offering a wide selection from water-soluble to insoluble products</td>
<td></td>
</tr>
<tr>
<td>LS, NSQ, V</td>
<td>(Look at the page by composition)</td>
<td>Polymerization</td>
<td>p63</td>
<td>paste</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEWPOL PP</td>
<td>Polypropylene glycol</td>
<td>Synthesis,</td>
<td>p61</td>
<td>liquid</td>
<td>• Non-volatile/low freezing point</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polymerization</td>
<td></td>
<td></td>
<td>• Wetting agent &amp; moisturizer for cosmetics/raw material for cosmetics, surfactant &amp; synthetic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>lubricant/leasing lubricant</td>
<td></td>
</tr>
<tr>
<td>NEWPOL GP</td>
<td>Polypropylene triol</td>
<td>Synthesis,</td>
<td>p64</td>
<td>liquid</td>
<td>• Derived from plants/no animal ingredients nor genetically-modified ingredients</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polymerization</td>
<td></td>
<td></td>
<td>• For pharmaceutical preparations (plasticizer/lubricant/solubilizer/wetting agent/emulsifier/)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Corresponding to the pharmacopeias (JP, USP/NF, EP)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td>POLYSORBATE 80</td>
<td>Modified solbitan</td>
<td>Excipient</td>
<td>-</td>
<td>liquid</td>
<td>• Corresponding to the pharmacopeias (JP, USP/NF, EP)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td>PEG</td>
<td>Polyoxyethylene</td>
<td>Synthesis,</td>
<td>p70</td>
<td>liquid, wax,</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>glycol</td>
<td>Polymerization,</td>
<td></td>
<td>paste, powder</td>
<td>• Low acute toxicity/flow irritation to eyes &amp; skins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excipient</td>
<td></td>
<td></td>
<td>• Widely used in various applications</td>
<td></td>
</tr>
<tr>
<td>MACROGOL</td>
<td>Polyethylene glycol</td>
<td>Excipient</td>
<td>p70</td>
<td>liquid, flake,</td>
<td>• Compatible with skin/water-soluble &amp; -retainable/non-volatile/free from greasiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>powder, paste</td>
<td>• Corresponding to the Japanese Pharmacopoeias &amp; Pharmaceutical Excipients</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Exclusively used in medical drug manufacturing/medical drug for exclusive use in manufacturing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Base material for ointments &amp; suppositories/lubricant &amp; binder for tablets or capsules/plasticizer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&amp; solubilizer for manufacturing medicine</td>
<td></td>
</tr>
<tr>
<td>NEOMER</td>
<td>Acrylate/Methacrylate-</td>
<td>Polymerization,</td>
<td>p72</td>
<td>liquid</td>
<td>• Low odor &amp; low irritation to skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>monomer</td>
<td>Film formation</td>
<td></td>
<td></td>
<td>• Providing hard coating film with excellent solvent resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Look at the page by</td>
<td></td>
<td></td>
<td></td>
<td>• Monomer for UV, EB curing resin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>composition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACRYLATE SMC-80H</td>
<td>Dimethylaminoethyl acrylate</td>
<td>Polymerization</td>
<td>p72</td>
<td>liquid</td>
<td>• Good compatibility with other vinyl monomers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>quaternary salt</td>
<td></td>
<td></td>
<td></td>
<td>• Polymer modifier/imparting hydrophilicity, antistatic or adsorptive property/drainage &amp; retention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>aid in paper making processes/polymer flocculant/electrolysis or reverse osmosis membrane/ion-exchange resin/paper strengthening agent</td>
<td></td>
</tr>
<tr>
<td>METHACRYLATE</td>
<td>Long-chain alkyl methacrylate</td>
<td>Polymerization</td>
<td>p73</td>
<td>liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or dialkylaminoalkyl</td>
<td></td>
<td></td>
<td></td>
<td>• Good compatibility with other vinyl monomers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methacrylate derivatives</td>
<td></td>
<td></td>
<td></td>
<td>• Polymer modifier/imparting hydrophilicity, antistatic or adsorptive property/drainage &amp; retention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>aid in paper making processes/polymer flocculant/electrolysis or reverse osmosis membrane/ion-exchange resin/paper strengthening agent</td>
<td></td>
</tr>
<tr>
<td>NEWPOL MP-5</td>
<td>Polypropylene glycol</td>
<td>Polymerization</td>
<td>p73</td>
<td>liquid</td>
<td>• Containing a hydroxyl- &amp; a methacrylic group in a molecule</td>
<td></td>
</tr>
<tr>
<td></td>
<td>monomethacrylate</td>
<td></td>
<td></td>
<td></td>
<td>• Resin modifier</td>
<td></td>
</tr>
</tbody>
</table>
## Product Name | Composition Classification | Principal Component | Page | Form (20±5°C) | Uses & Features (of all functions) | Major Applications
--- | --- | --- | --- | --- | --- | ---
SOFIC W-802 | Acrylic resin solution | Polymerization, Film formation | - | liquid | • Excellent adhesion, glossiness, abrasion-resistance, blocking-resistance property & pasting suitability<br>• Mixed solvent of water & alcohol<br>• Gloss coating agent for printing paper | For Reacting/Forming
POLYQUID | Methacrylic acid - ethyl acrylate copolymer | Polymerization, Excipient | p72 | liquid | • Aqueous dispersion<br>• Enteric-soluble coating agent/masking pungency/binder for matrices<br>• Corresponding to Pharmacopeias in the USA, Japan & some product are compatible to the ones in Europe | For Reacting/Forming
GLYCIALE PP | Poly(oxypropylene glycol) diglycidyl ether | Polymerization, Film formation | p67 | liquid | • Imparting flexibility & plasticity to resins<br>• Providing rust preventive coating film<br>• Raw material for epoxy resins & electrodeposition coatings/resin modifier | For Reacting/Forming
VCH | 4-Vinyl-1-cyclohexene | Synthesis, Polymerization | p68 | liquid | • Monomer for resins/polymerization<br>• Mw 108.2, CAS No. 100-40-3, San-Petrochemicals Co., Ltd.’s products | For Reacting/Forming
REGIT SM | Styrene-maleic acid ester copolymer | Forming | - | granule | • Containing carbonyl groups in a molecule<br>• Dispersant for pigments & fillers/impacting hardness, abrasion-resistance & leveling property for floor polish coatings | For Reacting/Forming
SANWAX | Low-molecular-weight polyethylene | Forming, Excipient | p68 | powder, pellet, etc. | • Moderate hardness, low melt viscosity equivalent to polyethylene/compatible with polymers excepting polyethylene/for cosmetics/abrasives/anti-sagging agents/binder for ink/pigments, filler dispersants/improver for flowability, softening point, abrasion-resistance & releasability/flattening agent/lubricant for agricultural | For sofas
VISCOL | Low-molecular-weight polypropylene | Forming, Excipient | p68 | powder | • Moderate hardness, low melt viscosity equivalent to polypropylene/compatible with polymers excepting polyethylene/for cosmetics/abrasives/anti-sagging agents/binder for ink/pigments, filler dispersants/improver for flowability, softness, softening point & abrasion-resistance/flattening agent/lubricant | For Reacting/Forming
SANNIX AP-470, NE-240, NL | Aliphatic amine-based polyol | Polymerization, Forming, Molding | p69 | liquid | • Low viscosity/high reactivity<br>• Raw material for polyurethane foam | For Reacting/Forming
SANNIX NP-300 NEWPOL NP-300 | Polymerization, Forming | p69/70 | liquid | • Little shrinkage of foaming<br>• Raw material for polyurethane foam<br>• Cross-linking agent | For Reacting/Forming
SANNIX HM | Aromatic amine-based polyol | Polymerization, Forming | p70 | liquid | • Good compatibility with aromatic polyisocyanates<br>• Resulting foam has excellent compressive strength & dimensional stability with fine-cells<br>• Raw material for polyurethane foam (rigid foam for injection panels or boards) | For Reacting/Forming
MELPOL F-220 | Isocyanate modified polyether | Polymerization, Film formation | - | pellet | • Aqueous solution has surface activating ability/forming flexible & elastic film<br>• Decompositing thermally at relatively low temperature & hardly-leaving ash after incineration<br>• Sizing agent for glass-fibers (warp-yarn)/water-soluble polymer | For Reacting/Forming
SANESTER | Alkylene adipates | Polymerization, Film formation, Forming | p69 | liquid to paste, solid, etc. | • Raw material for polyurethane resins (e.g. adhesives, coatings, elastomers & sealants) | For Reacting/Forming
NEWPOL BP | Bisphenol A-propylene oxide adduct | Polymerization, Forming | p70 | liquid | • Resulting resin has excellent corrosion resistance & flexibility<br>• Raw material for resins, organic-intermediate/modifier for resin | For Reacting/Forming
NEWPOL BPE | Bisphenol A-ethylene oxide adduct | Polymerization, Forming | p70 | liquid, block, etc. | • Low viscosity<br>• Resulting foam has excellent dimensional stability, mechanical properties & heat resistance<br>• Raw material for polyurethane foam (high-density rigid foam) | For Reacting/Forming
SANNIX HS | Sucrose-based polyether polyl | Polymerization, Forming | p70 | liquid | • Offering a wide selection of molecular weight<br>• Raw material for polyurethane foam<br>• For polyurethane foam from flexible to semi-rigid | For Reacting/Forming
SANNIX FA | Proprietary polyether polyl | Polymerization, Forming | - | liquid | • Excellent mechanical property & heat resistance<br>• Raw material for polyurethane foam (high density rigid foam) | For Reacting/Forming
SANNIX HD-402 | Pentaerythritol-based polyetherpolyl | Polymerization, Forming | p71 | liquid | | |
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANNIX PL-2100</td>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>Polymerization, Forming</td>
<td>p70</td>
<td>liquid</td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX PF-615</td>
<td>Polyether polyol</td>
<td>Polymerization, Forming</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent flowability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for polyurethane foam (casting rigid foam)</td>
<td></td>
</tr>
<tr>
<td>ECONIX PF-610</td>
<td>Polyetherpolyol compound</td>
<td>Polymerization, Forming</td>
<td>-</td>
<td>liquid</td>
<td>• High reactivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for polyurethane foam</td>
<td></td>
</tr>
<tr>
<td>SANNIX GL-3000</td>
<td>Polyoxyetylene polyoxypropylene triol</td>
<td>Polymerization, Forming</td>
<td>p71</td>
<td>liquid</td>
<td>• Offering a wide selection of molecular weight</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• The resulting foam has ideal balance of properties</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX GP, GH</td>
<td>Polyoxypropylene triol</td>
<td>Polymerization, Forming</td>
<td>p71/</td>
<td>liquid</td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX PP</td>
<td>Polyoxypropylene glycol</td>
<td>Polymerization, Forming</td>
<td>p71</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX SP-750</td>
<td>Polyoxypropylene sorbitol ether</td>
<td>Polymerization, Forming</td>
<td>p71</td>
<td>liquid</td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX TP-400</td>
<td>Trimethylolpropane-based polyether polyol</td>
<td>Polymerization, Forming</td>
<td>p71</td>
<td>liquid</td>
<td>• Excellent reactivity because of its high ratio of primary hydroxyl group with approx. 70mol %</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>compatible water resistant which is a conflicting performance</td>
<td></td>
</tr>
<tr>
<td>PRIMEPOL</td>
<td>Polyoxypropylene glycol or triol</td>
<td>Polymerization, Forming</td>
<td>p71</td>
<td>liquid</td>
<td>• Raw material for polyurethane foam &amp; resins (e.g. adhesives, coatings, elastomers &amp; sealants)</td>
<td></td>
</tr>
<tr>
<td>SANNIX KC</td>
<td>Polyether polyl or polymer polyol</td>
<td>Polymerization, Forming</td>
<td>-</td>
<td>liquid</td>
<td>• Excellent curability and durability (moist heat resistance)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for polyurethane foam (high-resilient foam)</td>
<td></td>
</tr>
<tr>
<td>SHARPFLOW FS-7301</td>
<td>Polymer polyl</td>
<td>Polymerization, Forming</td>
<td>-</td>
<td>liquid</td>
<td>• Resulting foams have high hardness and good physical properties with good breathability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Raw material for flexible slabstock foam</td>
<td></td>
</tr>
<tr>
<td>DSA, PDSA-DA</td>
<td>Alkenyl succinic anhydride</td>
<td>Synthesis, Polymerization</td>
<td>p69</td>
<td>liquid</td>
<td>• Imparting long pot life, excellent electrical insulating property, flexibility &amp; bending strength to resins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Epoxy curing agent/rust preventive/corrosion inhibitor</td>
<td></td>
</tr>
<tr>
<td>SANAMEEL TAP</td>
<td>Polyetheramine</td>
<td>Polymerization</td>
<td>-</td>
<td>liquid</td>
<td>• Low viscosity/high reactivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Offering flexible &amp; hydrophobic cured resin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Epoxy resin curing agent/raw material for epoxy resin emulsion</td>
<td></td>
</tr>
<tr>
<td>POLYMIDE L</td>
<td>Polyamideamine</td>
<td>Polymerization, Film formation, Forming</td>
<td>p69</td>
<td>liquid</td>
<td>• Cured epoxy resin has rust prevention, excellent adhesion, toughness &amp; flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Cureing agent for epoxy resin used to coatings, adhesives, civil engineering &amp; construction, laminating &amp; casting materials, etc.</td>
<td></td>
</tr>
<tr>
<td>POLYMIDE S</td>
<td>Polyamideamine</td>
<td>Polymerization, Film formation, Forming</td>
<td>p69</td>
<td>powder</td>
<td>• Resulting coating film has excellent water-, chemical-, abrasion-, weather-, oil-, blocking resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Excellent glossiness &amp; adhesion to polyolefin films</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Resin for special gravure printing ink</td>
<td></td>
</tr>
<tr>
<td>REACT CA-101</td>
<td>Modified aliphatic polyamine</td>
<td>Polymerization, Film formation, Forming</td>
<td>p69</td>
<td>liquid</td>
<td>• Excellent low-temperature curability/hardly susceptible to carbon dioxide &amp; moisture on curing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Epoxy resin curing agent</td>
<td></td>
</tr>
<tr>
<td>GREENMODUR</td>
<td>Polyurethanated product derived from biological materials</td>
<td>Shaping, Forming</td>
<td>-</td>
<td>board</td>
<td>• Tooling material (chemical board) for models or molds in various processes (designing, trial, &amp; production) by cutting &amp; milling</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Excellent fine structure, dimensional stability, homogeneity &amp; processability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Using biomass as raw materials</td>
<td></td>
</tr>
</tbody>
</table>
## List by Performance (Function)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition Classification</th>
<th>Principal Component</th>
<th>Page</th>
<th>Form (20±5°C)</th>
<th>Uses &amp; Features (of all functions)</th>
<th>Major Applications</th>
</tr>
</thead>
</table>
| SANMODUR    | Synthetic/artificial wood (Polyurethanated product) | Shaping, Forming | -    | board         | • Tooling material (chemical board) for models & molds in various processes (designing, trial & production) by cutting & milling  
  • Excellent fine structure, dimensional stability, homogeneity & processability/ giving appropriate property according to the application | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors  
  For tooling material (chemical board) for modeling |
| PERMARIN    | Film formation            | p74 liquid          |      |               | • Resulting coating film has excellent flexibility, water-, adhesion- & chemical resistance  
  • Raw material for coatings, ink & adhesives/binder for pigment printing  
  • Texture modifier/shrink-resistant finishing agent/Imparting elastic repulsion/ pilling preventing agent | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| UCOAT       | Polyurethane emulsion     | Film formation      | p74  | liquid        | • Forming coating films has excellent yellowing-, water- & chemical-resistance, flexibility & adhesion  
  • Resin for aqueous coating materials | For Reacting/Forming  
  For synthetic leathers |
| UPRENE UXA-307 | Two-component type (main and curing agent) of polyurethane | Polymerization, Forming | p74  | liquid        | • Forming film has excellent adhesion & water-resistance  
  • Adhesive for plastics, fabrics & woods/excels in adhesion with PVC sheet & plywood  
  • Unavailable for use directly brought into contact with the skins because of containing N-methyl (pyrrolidone) | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANFOAM     | (RC-1026, IC-559) Two-component type polyurethane | Polymerization, Forming | -    | liquid        | • Raw material for polyurethane foam (cushion for automobiles, etc./cold molding flexible foam)  
  • Potting material for dialyzer & water purifiers | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| POLYMEDICA  | Two-component type polyurethane | Polymerization, Forming | -    | liquid        | • Resulting adhesion layer has excellent moisture permeability  
  • Top layer for moisture-permeable & waterproofing fabrics (resulting film has the excellent moisture-permeability)  
  • For resin of artificial leather or synthetic leather | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| COATRON     | Film formation            | p74 liquid          |      |               | • Resulting adhesion layer has excellent moisture permeability  
  • Top layer for moisture-permeable & waterproofing fabrics (resulting film has the excellent moisture-permeability)  
  • Resin for coatings | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE H  | Polyurethane solution     | Film formation      | p74  | liquid        | • Resulting coating film has excellent weather-, water-, chemical-, abrasion-, blocking- 
  resistance & adhesion  
  • For resin of special gravure ink | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE HMP-17A | Two-component type polyurethane | Polymerization, Forming | p74  | liquid        | • For resin of artificial leather & synthetic leather  
  • Top layer for moisture-permeable & waterproofing fabrics (resulting film has the excellent moisture permeability) | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE IB | Film formation            | p74 liquid          |      |               | • For resin of artificial leather & synthetic leather  
  • Top layer for moisture-permeable & waterproofing fabrics (resulting film has the excellent moisture permeability) | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE LQ | Film formation            | p74 liquid          |      |               | • For resin of artificial leather & synthetic leather  
  • Top layer for moisture-permeable & waterproofing fabrics (resulting film has the excellent moisture permeability) | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| THERPUS     | Polyurethane beads        | Film formation      | -    | powder        | • Skin material for automobile interiors (polyurethane beads for slush molding)  
  • Excellent in flowability, handling performance, moldability, heat- & light resistance | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE FLR-603 | Urethane prepolymer | Polymerization, Film formation | p73  | liquid        | • Cold curing/resulting coating film has excellent abrasion-resistance  
  • For floor coating (especially concrete floor) | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE P  | Urethane prepolymer       | Polymerization, Forming | p73  | liquid        | • Resulting elastomer has excellent abrasion resistance, mechanical properties & low permanent compression set  
  • For polyurethane elastomer | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPRENE C  | Film formation            | p73 liquid          |      |               | • Resulting coating film has excellent abrasion-, shock- & chemical-resistance, gloss-retention 
  & adhesion  
  • One-component moisture curing system  
  • Urethane clear lacquer | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANPEX PA-55 | Glycidyl group-containing acrylic resin | Polymerization, Film formation | -    | granule       | • Used in combination with dibasic acid  
  • Resulting coating film has excellent pigment dispersibility, weather resistance/glossiness & smoothness  
  • Resin for powder coating | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
| SANMODUR (two-component type) | Two-component curing type epoxy resin | Polymerization, Forming, Shaping | -    | liquid, paste | • Resin for models or molds made by cutting or casting from reverse molds in various processes for developing products/mounting & molding resin/adhesive/mounting repairment  
  • Excellent fine structure, dimensional stability, homogeneity, processability, workability/ giving appropriate property according to the application | For Reacting/Forming  
  For synthetic leathers  
  For automobile interiors |
### Anionic Surfactants

#### Carboxylic-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium polyacrylate</td>
<td>ELEMINOL MBN-2</td>
<td>p9 Emulsifying</td>
</tr>
<tr>
<td>Sodium polyoxyethylene tridecyl ether carboxylate</td>
<td>BEAULIGHT ECA</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth carboxylic acid</td>
<td>BEAULIGHT LCA-H</td>
<td>p3 Cleaning</td>
</tr>
<tr>
<td>Sodium polyoxyethylene lauryleth carboxylate</td>
<td>BEAULIGHT LCA</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Polycarboxylate</td>
<td>CARRYBON L-400</td>
<td>p15 Dispersing, p35 Viscosity Controlling</td>
</tr>
<tr>
<td>Sodium [[2-hydroxysodium]-oxy] acetate</td>
<td>BEAULIGHT SHAA</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
</tbody>
</table>

#### Sulfosuccinate-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disodium laureth sulfosuccinate</td>
<td>BEAULIGHT SSS</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Sodium dioctyl sulfosuccinate</td>
<td>CARABON DA-72</td>
<td>p5 Writing/Preserving, p9 Emulsifying, p15 Dispersing</td>
</tr>
<tr>
<td>Sodium polyoxyethylene lauryleth sulfosuccinate</td>
<td>BEAULIGHT LSS</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Sodium alkyl allyl sulfosuccinate</td>
<td>ELEMINOL JS-20</td>
<td>p9 Emulsifying</td>
</tr>
</tbody>
</table>

#### Sulfonate-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disodium monolauroylethanolamide poloxethylene sulfosuccinate</td>
<td>BEAULIGHT A-5000</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Disodium polyoxyethylene alky1 sulfosuccinate</td>
<td>BEAULIGHT ESS</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
</tbody>
</table>

#### Sulfuric acid ester-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disodium 2-ethylhexyl sulfate</td>
<td>SANDET ONA</td>
<td>p9 Emulsifying, p15 Dispersing</td>
</tr>
<tr>
<td>Polyoxyalkylene alkyl ether ammonium sulfonate</td>
<td>ELEMINOL CLS-20</td>
<td>p9 Emulsifying</td>
</tr>
<tr>
<td>Sodium polyoxyethylene alky1 ether sulfate</td>
<td>SANDET END</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Sodium polyoxyethylene lauryleth ether sulfate</td>
<td>SANDET EN</td>
<td>p3 Cleaning, p9 Emulsifying, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth ether sulfate triethanolamine</td>
<td>SANDET ET</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Methacryloyloxy poloxpropylene sodium sulfate</td>
<td>ELEMINOL RS-3000</td>
<td>p9 Emulsifying</td>
</tr>
</tbody>
</table>
### Cationic Surfactants

#### Ammonium salt-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cetyltrimethylammonium chloride, Cetyltrimethylammonium methyl sulfate</td>
<td>LEBON TM-16, 16MS</td>
<td>p45 Antimicrobial</td>
</tr>
<tr>
<td>Stearyltrimethylammonium chloride</td>
<td>LEBON TM-18, 18PA</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
<tr>
<td>Ethyl sulfuric acid lanolin fatty acid aminopropylethyl dimethylammonium</td>
<td>CATION LQ</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
<tr>
<td>Didecyldimethylammonium adipate</td>
<td>OSMORIN DA-50</td>
<td>p43 Antimicrobial</td>
</tr>
<tr>
<td>Behenyltrimethylammonium chloride or Stearyltrimethylammonium chloride</td>
<td>ECONOL</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
<tr>
<td>Distearidyltrimethylammonium chloride</td>
<td>CATION DSV</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
</tbody>
</table>

#### Imidazolium salt-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imidazoline compound</td>
<td>CATION SF</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
</tbody>
</table>

#### Benzalkonium-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stearyldimethylbenzylammonium chloride</td>
<td>CATION S</td>
<td>p23 Lubricating/Leveling, p31 Plasticizing/Softening, p39 Antistatic</td>
</tr>
<tr>
<td>Benzalkonium chloride</td>
<td>CATION Q-50</td>
<td>p5 Wetting/Penetrating, p31 Plasticizing/Softening, p45 Antimicrobial</td>
</tr>
</tbody>
</table>

#### Nonionic Surfactants

#### Amide-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkylol amide based surfactant</td>
<td>PROFAN 128 EXTRA, AA-62EX, EXTRA 24</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing, p35 Viscosity Controlling, p45 Rust Preventive</td>
</tr>
<tr>
<td>Alkylol amide based surfactant</td>
<td>PROFAN 2012E</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing, p35 Viscosity Controlling, p45 Rust Preventive</td>
</tr>
<tr>
<td>Alkylol amide based surfactant</td>
<td>PROFAN AB-20, SME</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing, p35 Viscosity Controlling, p45 Rust Preventive</td>
</tr>
<tr>
<td>Alkylol amide based surfactant</td>
<td>PROFAN ME-20</td>
<td>p3 Cleaning, p21 Foaming/-stabilizing, p35 Viscosity Controlling, p45 Rust Preventive</td>
</tr>
</tbody>
</table>

#### Ether-based (Amine type)

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyoxyalkylene alkyl amine</td>
<td>PUREMEEL</td>
<td>p3 Cleaning</td>
</tr>
<tr>
<td>Polyoxyalkylene alkyl amine</td>
<td>EMULMIN LCA-10</td>
<td>p3 Cleaning</td>
</tr>
</tbody>
</table>
### Ether-based Surfactants

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenoxyethanol</td>
<td>NEWPOL EFP</td>
<td>p13 Solubilizing, p45 Antibacterial</td>
</tr>
<tr>
<td>Polyoxypropylene monobutyl ether</td>
<td>COLORIN 104</td>
<td>p23 Defoaming</td>
</tr>
<tr>
<td>Polyoxyalkylene alky ether derived from synthetic alcohols</td>
<td>SANNONIC TN</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td></td>
<td>SEDORAN FF</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td></td>
<td>NARACTY CL</td>
<td>p3, 5 Cleaning</td>
</tr>
<tr>
<td></td>
<td>SANNONIC FN</td>
<td>p7 Wetting/Penetrating, p17 Dispersing</td>
</tr>
<tr>
<td></td>
<td>NARACTY ID</td>
<td>p3 Cleaning, p7 Wetting/Penetrating</td>
</tr>
<tr>
<td></td>
<td>NEWPOL B-12</td>
<td>p13 Solubilizing</td>
</tr>
<tr>
<td></td>
<td>BLEMBER</td>
<td>p23 Lubricating/Leveling</td>
</tr>
<tr>
<td>Polyoxyethylene alkyl ether</td>
<td>ELEMINOL 200L</td>
<td>p11 Emulsifying</td>
</tr>
<tr>
<td>Polyoxyethylene lauryl glycol derived from synthetic alcohols</td>
<td>NEWPOL DDE-10</td>
<td>p37 Viscosity Controlling, p45 Antibacterial</td>
</tr>
<tr>
<td>Polyoxypropylene glycol</td>
<td>NEWPOL PP</td>
<td>p7 Wetting/Penetrating, p25 Lubricating/Leveling, p49 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyoxyalkylene glycol monoether or borate</td>
<td>NEWPOL SBF</td>
<td>p13 Solubilizing</td>
</tr>
<tr>
<td>Polyoxyalkylene lauryl ether derived from natural higher alcohols</td>
<td>EMULMIN FL, HL</td>
<td>p3 Cleaning, p5 Wetting/Penetrating, p11 Emulsifying, p13 Solubilizing, p17 Dispersing</td>
</tr>
<tr>
<td>Polyoxyethylene alkyl ether derived from natural higher alcohols</td>
<td>EMULMIN No.</td>
<td>p3 Cleaning, p5 Wetting/Penetrating, p9 Emulsifying, p13 Solubilizing, p17 Dispersing, p21 Foaming/-stabilizing, p47 Other Functions</td>
</tr>
</tbody>
</table>

---

Continued on the next page
List by Composition  The structures show the representative compositions. The compositions are described in common names of them.

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>NEWDET PE-85</td>
<td>p7 Wetting/Penetrating, p13 Lubricating/Leveling, p27 Adhesive, p37 Viscosity Controlling, p49 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyethylene glycol POE-Polyoxypropylene glycol</td>
<td>NEWPOL PE</td>
<td>p5 Cleaning, p7 Wetting/Penetrating, p11 Emulsifying, p13 Solubilizing, p17 Dispersing, p25 Lubricating/Leveling, p31 Plasticizing/Softening, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene triol</td>
<td>NEWPOL GEP-2800</td>
<td>p7 Wetting/Penetrating, p23 Defoaming, p25 Lubricating/Leveling, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene trimethylolpropane</td>
<td>NEWPOL TL</td>
<td>p7 Wetting/Penetrating, p23 Defoaming, p25 Lubricating/Leveling, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene butyl ether</td>
<td>NEWPOL 50HB</td>
<td>p7 Wetting/Penetrating, p23 Defoaming, p25 Lubricating/Leveling, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene hexylene glycol ether</td>
<td>NEWPOL 750-90000</td>
<td>p7 Wetting/Penetrating, p23 Defoaming, p25 Lubricating/Leveling, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth ether derived from natural higher alcohols</td>
<td>EMULMIN L</td>
<td>p3 Cleaning, p11 Emulsifying, p13 Solubilizing, p17 Dispersing, p21 Forming/stabilizing, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth ether derived from natural higher alcohols</td>
<td>EMULMIN LS</td>
<td>p3 Cleaning, p11 Emulsifying, p13 Solubilizing, p17 Dispersing, p21 Forming/stabilizing, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth ether derived from natural higher alcohols</td>
<td>EMULMIN NL</td>
<td>p3 Cleaning, p11 Emulsifying, p13 Solubilizing, p17 Dispersing, p21 Forming/stabilizing, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Polyoxyethylene lauryleth ether derived from natural higher alcohols</td>
<td>LAUROMACROGOL 100</td>
<td>p5 Cleaning, p7 Wetting/Penetrating</td>
</tr>
<tr>
<td>Polyoxypropylene triol</td>
<td>NEWPOL GP</td>
<td>p7 Wetting/Penetrating, p25 Lubricating/Leveling, p49 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyoxypropylene butyl ether</td>
<td>NEWPOL LB</td>
<td>p7 Wetting/Penetrating, p23 Defoaming, p25 Lubricating/Leveling, p37 Viscosity Controlling</td>
</tr>
<tr>
<td>Ethylene glycol distearate</td>
<td>SANTOPEARL GE-70</td>
<td>p47 Other Functions</td>
</tr>
<tr>
<td>Polyethylene glycol distearate</td>
<td>EMULMIN 862</td>
<td>p37 Viscosity Controlling</td>
</tr>
</tbody>
</table>

Continued on the next page
### Nonionic Surfactants

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyceryl monostearate</td>
<td>TG-C</td>
<td>p7 Wetting/Penetrating</td>
</tr>
<tr>
<td>Sorbitan mono- or di-fatty acid ester</td>
<td>IONET S</td>
<td>p7 Wetting/Penetrating, p11 Emulsifying, p13 Solubilizing, p17 Osmopressing, p23 Ostreasing, p25 Lubricating/Leveling, p33 Plasticizing/Softening</td>
</tr>
<tr>
<td>Polyoxyethylene sorbitan monofatty acid ester</td>
<td>IONET T</td>
<td>p7 Wetting/Penetrating, p11 Emulsifying, p13 Solubilizing, p17 Osmopressing, p25 Lubricating/Leveling, p33 Plasticizing/Softening, p37 Viscosity Controlling, p45 Rust Preventing</td>
</tr>
<tr>
<td>Polyoxyethylene fatty acid diester</td>
<td>IONET DL-200</td>
<td>p5 Cleaning, p11 Emulsifying, p13 Solubilizing, p17 Osmopressing, p25 Lubricating/Leveling</td>
</tr>
<tr>
<td>Polyoxyethylene fatty acid monoester</td>
<td>IONET MO, MS</td>
<td>p5 Cleaning, p11 Emulsifying, p13 Solubilizing, p17 Osmopressing, p25 Lubricating/Leveling</td>
</tr>
</tbody>
</table>

### Amphoteric Surfactants

#### Amino Acid-type

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>N- lauroyl-N'- carboxymethyl -N'- hydroxyethyl ethylenediamine sodium solution</td>
<td>LEBON 101-H</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td>Sodium laurylamidopropionate</td>
<td>LEBON APL</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td>Sodium cocamidopropionate</td>
<td>LEBON APL-D</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td>Alkyl carboxymethyl hydroxyethyl imidazolium betaine</td>
<td>LEBON 105</td>
<td>p5 Cleaning</td>
</tr>
<tr>
<td>Dodecylaminoethyleniminoethylglycine</td>
<td>LEBON S</td>
<td>p45 Antibacterial</td>
</tr>
<tr>
<td>Lauryldimethyleniminoacid betaine</td>
<td>LEBON LD-36</td>
<td>p5 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
<tr>
<td>Alkylaminoethyleniminoacid hydrochloride</td>
<td>LEBON T-2</td>
<td>p45 Antibacterial</td>
</tr>
</tbody>
</table>

#### Betaine-type

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myristic acid amide propyl betaine</td>
<td>LEBON MY-30W</td>
<td>p5 Cleaning, p21 Foaming/-stabilizing</td>
</tr>
</tbody>
</table>

Continued on the next page...
### Functional bases, intermediates, additives

#### Esters

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisphenol-A type unsaturated polyester</td>
<td>CHEMITYLEN PEB-13ST</td>
<td>p27 Adhesive</td>
</tr>
<tr>
<td>Polyethyleneglycol dibenzoate</td>
<td>SANFLEX EB EB-200</td>
<td>p33 Plasticizing/Softening</td>
</tr>
<tr>
<td>Esterified multi-functional polyetherpolyol</td>
<td>SANFLEX GPA-3000, LBU-25, SPX-80N</td>
<td>p33 Plasticizing/Softening</td>
</tr>
<tr>
<td>Polyoxyalkylene monoalkylether acetate</td>
<td>SANFLEX SK-500</td>
<td>p33 Plasticizing/Softening</td>
</tr>
</tbody>
</table>

#### Epoxides

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyoxypropylene glycol diglycidyl ether</td>
<td>GLYCIALE PP</td>
<td>p33 Plasticizing/Softening</td>
</tr>
</tbody>
</table>

#### Acids/Acid Anhydrides

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkenylsuccinic acid ester</td>
<td>SANHIBITOR</td>
<td>p45 Rust Preventive</td>
</tr>
<tr>
<td>Alkenylsuccinic anhydride</td>
<td>SANHIBITOR</td>
<td>p45 Rust Preventive</td>
</tr>
<tr>
<td>Sodium-5-sulphoisophthalic acid</td>
<td>SIPA</td>
<td>p41 Antistatic</td>
</tr>
</tbody>
</table>

## Olefin or Styrene-based

#### Composition and Structure

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Vinyl-1-cyclohexene</td>
<td>VCH</td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Low-molecular-weight polyethylene</td>
<td>SANWAX</td>
<td>p17 Dispersing, p25 Lubricating/Leveling, p33 Plasticizing/Softening, p37 Viscosity Controlling, p47 Other Functions, p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Low-molecular-weight polypropylene</td>
<td>VISCOL</td>
<td>p17 Dispersing, p25 Lubricating/Leveling, p33 Plasticizing/Softening, p37 Viscosity Controlling, p47 Other Functions, p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Acid modified low-molecular-weight polypropylene</td>
<td>UMEX</td>
<td>p17 Dispersing, p27 Adhesive</td>
</tr>
<tr>
<td>Low-molecular-weight polystyrene</td>
<td>HIMER SB, HIMER ST, REGIT S-94</td>
<td>p17 Dispersing, p25 Lubricating/Leveling, p33 Plasticizing/Softening, p37 Viscosity Controlling, p47 Other Functions, p51 For Reacting/Forming</td>
</tr>
</tbody>
</table>

Continued on the next page →
The structures show the representative compositions. The compositions are described in common names of them.

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodecenyl succinic anhydride</td>
<td>DSA</td>
<td>p27 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p33 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p37 Viscosity Controlling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p45 Rust Preventive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53 For Reacting/Forming</td>
</tr>
<tr>
<td>Pentadecenyl succinic anhydride</td>
<td>PDSA-DA</td>
<td>p27 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p33 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p37 Viscosity Controlling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p45 Rust Preventive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53 For Reacting/Forming</td>
</tr>
<tr>
<td>Fatty acid compound</td>
<td>SANFRIC</td>
<td>p25 Lubricating/Leveling</td>
</tr>
</tbody>
</table>

### Nitrogen-Containing Compounds

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid polyamideamine</td>
<td>POLYMIDE L</td>
<td>p27 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p45 Rust Preventive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53 For Reacting/Forming</td>
</tr>
<tr>
<td>Powdery polyamideamine</td>
<td>POLYMIDE S</td>
<td>p27 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53 For Reacting/Forming</td>
</tr>
<tr>
<td>Higher fatty acid bisamide</td>
<td>SANTHIXO 5001</td>
<td>p37 Viscosity Controlling</td>
</tr>
</tbody>
</table>

### Polyols

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aliphatic amine-based polyol</td>
<td>SANNIX AP</td>
<td>p41 Water Absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Cold or Hot Insulating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td></td>
<td>SANNIX NP</td>
<td>p41 Water Absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Cold or Hot Insulating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Aliphatic amine-based polyol</td>
<td>SANNIX NE</td>
<td>p41 Water Absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Cold or Hot Insulating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyethylene adipate (there are some other polyester polyols, too)</td>
<td>SANESTER</td>
<td>p51 For Reacting/Forming</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyethylene glycol</td>
<td>PEG</td>
<td>p9 Wetting/Penetrating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p15 Solubilizing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p19 Dispersing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p25 Lubricating/Leveling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p29 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p33 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p39 Viscosity Controlling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41 Antistatic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Color hues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p47 Other Functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p49 For Reacting/Forming</td>
</tr>
<tr>
<td>MACROGOL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aromatic amine-based polyol</td>
<td>SANNIX HM</td>
<td>p41 Water Absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Cold or Hot Insulating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Bisphenol A-propylene oxide adduct</td>
<td>NEWPOL BP</td>
<td>p35 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Bisphenol A-ethylene oxide adduct</td>
<td>NEWPOL BPE</td>
<td>p35 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Sucrose-based polyether polyol</td>
<td>SANNIX HS</td>
<td>p41 Water Absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Cold or Hot Insulating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene glycol</td>
<td>SANNIX PL-2100</td>
<td>p29 Adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p35 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43 Color hues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51 For Reacting/Forming</td>
</tr>
</tbody>
</table>

Continued on the next page
<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyoxypropylene sorbitol ether</td>
<td>SANNIX SP-750</td>
<td>p29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Trimethylolpropane-based polyester polyl</td>
<td>SANNIX TP-400</td>
<td>p29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Pentaerythritol-based polyester polyl</td>
<td>SANNIX HD</td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p51</td>
</tr>
<tr>
<td>Polyoxypropylene glycol</td>
<td>SANNIX PP</td>
<td>p29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Polyoxypropylene glycol or Polyoxypropylene triol</td>
<td>PRIMEPOL</td>
<td>p29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Polyoxymethylene polyoxypropylene triol</td>
<td>SANNIX GL</td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Polypropylene triol</td>
<td>SANNIX GP, GH</td>
<td>p29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p53</td>
</tr>
<tr>
<td>Polyoxyethylene polyoxypropylene triol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on the next page...
The structures show the representative compositions. The compositions are described in common names of them.

### Urethane Series

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyurethane prepolymer</td>
<td>SANPRENE C</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td></td>
<td>SANPRENE FLR-603</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td></td>
<td>SANPRENE P</td>
<td>p55 For Reacting/Forming</td>
</tr>
</tbody>
</table>

Continued on the next page →

### Functional compounds, polymers

#### Methacrylate/Acrylate-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic resin or acrylic resin solution</td>
<td>POLYTHICK</td>
<td>p29 Adhesive</td>
</tr>
</tbody>
</table>

### Others

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyoxyethylene dimethyl ether</td>
<td>SANFINE DM-200</td>
<td>p15 Solubilizing</td>
</tr>
</tbody>
</table>

### Functional bases, intermediates, additives

<table>
<thead>
<tr>
<th>Functional compounds, polymers</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyurethane emulsion</td>
<td>CHEMITYLEN GA-500</td>
<td>p29 Adhesive</td>
</tr>
<tr>
<td></td>
<td>PERMARIN</td>
<td>p27 Adhesive/Lubricating</td>
</tr>
<tr>
<td></td>
<td>UCOAT</td>
<td>p35 Plasticizing/Softening</td>
</tr>
<tr>
<td></td>
<td>UPRENE UXA-307</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyurethane solution</td>
<td>COATRON</td>
<td>p31 Adhesive/Plasticizing</td>
</tr>
<tr>
<td></td>
<td>SANPRENE H</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td></td>
<td>SANPRENE HMP-17A</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td></td>
<td>SANPRENE IB</td>
<td>p31 Adhesive/Plasticizing</td>
</tr>
<tr>
<td></td>
<td>SANPRENE LQ</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyurethane resin system (Polyetherpolyol)</td>
<td>SANFOAM RC-1026</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td>Polyurethane resin system (Polyisocyanate)</td>
<td>SANFOAM IC-559</td>
<td>p55 For Reacting/Forming</td>
</tr>
<tr>
<td>Two-component type polyurethane</td>
<td>POLYBOND</td>
<td>p31 Adhesive</td>
</tr>
<tr>
<td>One-component moisture curing type polyurethane</td>
<td>UNOFLEX</td>
<td>p31 Adhesive</td>
</tr>
</tbody>
</table>

### Methacrylate/Acrylate-based

<table>
<thead>
<tr>
<th>Composition and Structure</th>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic resin or acrylic resin solution</td>
<td>POLYTHICK</td>
<td>p29 Adhesive</td>
</tr>
</tbody>
</table>
### IONET Products

**<IONET M, D>**
- IONET M are Polyoxyethylene monofatty acid esters
- IONET D are Polyoxyethylene difatty acid esters
- Widely used in various industries such as agrichemical, metal, cosmetic, paper, pulp or textile as emulsifiers, dispersants and leveling agents
- L: Lauric acid
- S: Stearic acid
- O: Oleic acid

**<IONET S, T>**
- Nonionic and lipophilic surfactant of sorbitan derivatives
- IONET S are Sorbitan mono- or di-fatty acid esters known as SPAN type surfactants
- IONET T are ethylene oxide adducts of IONET S and more hydrophilic, known as TWEEN type surfactants
- Used as emulsifiers, solubilizers, dispersants and rust preventives
- IONET S can be used as a defoaming agent

### IONET Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Appearance (20±5°C)</th>
<th>HLB</th>
<th>pH*1</th>
<th>Cloud Point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>IONET DL-200</td>
<td>Yellow liquid</td>
<td>6.6</td>
<td>6.5</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET DO-400</td>
<td>Pale straw-colored liquid</td>
<td>8.4</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET DO-600</td>
<td>Brown liquid</td>
<td>10.4</td>
<td>6.5</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET DO-1000</td>
<td>Pale yellow solid</td>
<td>12.9</td>
<td>6.5</td>
<td>35</td>
</tr>
<tr>
<td>IONET DS-300</td>
<td>Pale yellow-white solid</td>
<td>7.3</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET DS-4000</td>
<td>Pale straw-colored liquid</td>
<td>8.5</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET DS-400</td>
<td>Pale yellow-white solid</td>
<td>17.0</td>
<td>6.5</td>
<td>-</td>
</tr>
<tr>
<td>IONET MO-200</td>
<td>Pale brown liquid</td>
<td>8.4</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET MO-400</td>
<td>Pale straw-colored liquid</td>
<td>11.8</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET MO-600</td>
<td>Pale straw-colored liquid</td>
<td>13.7</td>
<td>7.0</td>
<td>53</td>
</tr>
<tr>
<td>IONET MS-400</td>
<td>Pale yellow solid</td>
<td>11.9</td>
<td>7.0</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET MS-1000</td>
<td>Pale yellow-white solid</td>
<td>15.7</td>
<td>6.5</td>
<td>&lt;20</td>
</tr>
<tr>
<td>IONET S-20</td>
<td>Straw-colored liquid</td>
<td>8.6</td>
<td>7.0</td>
<td>&lt;100</td>
</tr>
<tr>
<td>IONET S-60V</td>
<td>Pale yellow-white granule</td>
<td>4.7</td>
<td>8.0</td>
<td>-</td>
</tr>
<tr>
<td>IONET S-80</td>
<td>Straw-colored liquid</td>
<td>4.3</td>
<td>7.0</td>
<td>-</td>
</tr>
<tr>
<td>IONET S-80S</td>
<td>Straw-colored liquid</td>
<td>4.2</td>
<td>7.0</td>
<td>-</td>
</tr>
<tr>
<td>IONET S-85</td>
<td>Straw-colored liquid</td>
<td>1.8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>IONET T-20C</td>
<td>Yellow liquid</td>
<td>16.7</td>
<td></td>
<td>&gt;100</td>
</tr>
<tr>
<td>IONET T-60V</td>
<td>Yellow liquid</td>
<td>14.9</td>
<td></td>
<td>&gt;100</td>
</tr>
<tr>
<td>IONET T-80V</td>
<td>Yellow liquid</td>
<td>15.0</td>
<td>7.0</td>
<td>&gt;100</td>
</tr>
</tbody>
</table>

*1 1 wt % aq solution  
*2 2 wt % aq solution  
*3 5 wt % aq solution

### EMULMIN Products

**<EMULMIN No.>**
- Besides, used for foaming agent, thickener for cosmetic, oiliness improver, moisturizer, solubilizer, raw material for chemical reaction, pulp cooking aid and leveling dyeing agent

**<EMULMIN FL, HL>**
- Excellent low-temperature fluidity and detergency compared to the other nonionic surfactants with similar HLB

**<EMULMIN L, LS, NL>**
- Besides, applicable for foaming agents, thickener or solubilizer for cosmetics

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Composition</th>
<th>Appearance (20±5°C)</th>
<th>HLB</th>
<th>pH*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMULMIN 40</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Pale yellow liquid</td>
<td>8.0</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN 50</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Straw-colored liquid</td>
<td>9.0</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN 70</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Pale yellow-colored liquid</td>
<td>10.8</td>
<td>5.0</td>
</tr>
<tr>
<td>EMULMIN 110</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Pale yellow paste</td>
<td>13.2</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN 140</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Pale yellow paste to solid</td>
<td>14.2</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN 180</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>White to pale yellow paste</td>
<td>15.1</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN 200</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>Pale yellow solid</td>
<td>15.5</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN 240</td>
<td>Polyoxylene oleyl ether or cetyl ether</td>
<td>White to pale yellow solid</td>
<td>16.1</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN CC-100</td>
<td>Polyoxylene cetyl ether</td>
<td>White to pale yellow wax</td>
<td>13.3</td>
<td>6.5*2</td>
</tr>
<tr>
<td>EMULMIN CC-130</td>
<td>Polyoxylene cetyl ether</td>
<td>White to pale yellow solid</td>
<td>14.1</td>
<td>6.0</td>
</tr>
<tr>
<td>EMULMIN CC-150</td>
<td>Polyoxylene cetyl ether</td>
<td>White to pale yellow wax</td>
<td>15.1</td>
<td>6.5*2</td>
</tr>
<tr>
<td>EMULMIN CC-200</td>
<td>Polyoxylene cetyl ether</td>
<td>White to pale yellow wax</td>
<td>15.7</td>
<td>6.0*2</td>
</tr>
<tr>
<td>EMULMIN FL-80</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow liquid</td>
<td>-</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN FL-100</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow liquid</td>
<td>-</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN HL-80</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow liquid</td>
<td>-</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN HL-100</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow liquid</td>
<td>-</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN L-380</td>
<td>Polyoxylalkene lauryl ether</td>
<td>White solid</td>
<td>17.7</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN L-90-S</td>
<td>Polyoxylalkene lauryl ether</td>
<td>White solid to pale yellow liquid</td>
<td>13.2</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN LS-80</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow paste</td>
<td>13.1</td>
<td>7.0</td>
</tr>
<tr>
<td>EMULMIN LS-90</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow paste</td>
<td>13.6</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN NL-70</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Colorless to pale yellow liquid</td>
<td>12.4</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN NL-80</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Pale yellow liquid</td>
<td>13.1</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN NL-90</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Pale yellow liquid</td>
<td>13.6</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN NL-100</td>
<td>Polyoxylalkene lauryl ether</td>
<td>Pale yellow liquid</td>
<td>14.0</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN NL-110</td>
<td>Polyoxylalkene lauryl ether</td>
<td>White solid</td>
<td>14.4</td>
<td>6.5</td>
</tr>
<tr>
<td>EMULMIN LCA-10</td>
<td>Polyoxylalkene alkylamine</td>
<td>Straw-colored to brown liquid</td>
<td>-</td>
<td>8.0</td>
</tr>
</tbody>
</table>

*1 1 wt % aq solution  
*2 5 wt % aq solution
Polyolefins blended with UMEX excel in dispersibility of both pigments and fillers in resins, readily adhere to other materials, and make paints. These products have higher degrees of modification and lower melt viscosity compared with conventional acid modified polyolefin.

UMEX products are a series of acid modified low-molecular-weight polyolefin containing carboxylic anhydride groups as the functional groups. Polyolefins blended with UMEX excel in dispersibility of both pigments and fillers in resins, readily adhere to other materials, and make paints readily adhesive to resulting resins. Moreover, the products are very effective as modifiers for hot melt adhesives.

### SANWAX, VISCOL Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Appearance</th>
<th>Color1</th>
<th>Viscosity mPa·s (140°C)</th>
<th>Softening Point2 °C</th>
<th>Penetration Hardness3</th>
<th>Acid Value</th>
<th>Specific Gravity4 (20°C)</th>
<th>Mn5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANWAX 171-P</td>
<td>White powder</td>
<td>30</td>
<td>180</td>
<td>107</td>
<td>4.5</td>
<td>-</td>
<td>0.92</td>
<td>1,50</td>
</tr>
<tr>
<td>SANWAX 151-P</td>
<td>White powder</td>
<td>30</td>
<td>290</td>
<td>107</td>
<td>4</td>
<td>-</td>
<td>0.92</td>
<td>2,00</td>
</tr>
<tr>
<td>SANWAX 131-P</td>
<td>White powder</td>
<td>30</td>
<td>1,000</td>
<td>108</td>
<td>3.5</td>
<td>-</td>
<td>0.92</td>
<td>3,50</td>
</tr>
<tr>
<td>SANWAX 161-P</td>
<td>White powder</td>
<td>30</td>
<td>4,200</td>
<td>111</td>
<td>2</td>
<td>-</td>
<td>0.92</td>
<td>5,00</td>
</tr>
<tr>
<td>SANWAX LEL-250</td>
<td>Pale yellow pellet</td>
<td>50</td>
<td>600</td>
<td>124</td>
<td>&lt;1</td>
<td>-</td>
<td>0.95</td>
<td>3,00</td>
</tr>
<tr>
<td>SANWAX LEL-400P(EX)</td>
<td>White powder</td>
<td>50</td>
<td>650</td>
<td>128</td>
<td>1</td>
<td>1</td>
<td>0.96</td>
<td>4,00</td>
</tr>
<tr>
<td>SANWAX E-310</td>
<td>Pale yellow pellet</td>
<td>100</td>
<td>300</td>
<td>100</td>
<td>5</td>
<td>15</td>
<td>0.93</td>
<td>2,00</td>
</tr>
<tr>
<td>SANWAX E-330</td>
<td>Pale yellow pellet</td>
<td>100</td>
<td>850</td>
<td>104</td>
<td>4</td>
<td>17</td>
<td>0.94</td>
<td>2,00</td>
</tr>
<tr>
<td>SANWAX E-250P</td>
<td>Pale yellow powder</td>
<td>100</td>
<td>320</td>
<td>106</td>
<td>5</td>
<td>16</td>
<td>0.95</td>
<td>2,00</td>
</tr>
<tr>
<td>VISCOL 330-P</td>
<td>White powder</td>
<td>200</td>
<td>4,000</td>
<td>153</td>
<td>&lt;1</td>
<td>-</td>
<td>0.89</td>
<td>15,00</td>
</tr>
<tr>
<td>VISCOL 440-P</td>
<td>White powder</td>
<td>200</td>
<td>1,800</td>
<td>153</td>
<td>&lt;1</td>
<td>-</td>
<td>0.89</td>
<td>9,00</td>
</tr>
<tr>
<td>VISCOL 550-P</td>
<td>White powder</td>
<td>200</td>
<td>200</td>
<td>152</td>
<td>&lt;1</td>
<td>-</td>
<td>0.89</td>
<td>4,00</td>
</tr>
<tr>
<td>VISCOL 660-P</td>
<td>White powder</td>
<td>100</td>
<td>70</td>
<td>145</td>
<td>15</td>
<td>-</td>
<td>0.89</td>
<td>3,00</td>
</tr>
</tbody>
</table>

1) Melting point 2) ASTM D 2846 (under 21.18N) 3) ASTM D 257 4) Starting thermal degradation temperature, measured by TG-DTA, in the air

### UMEX Products

UMEX products are a series of acid modified low-molecular-weight polyolefin containing carboxylic anhydride groups as the functional groups. These products have higher degrees of modification and lower melt viscosity compared with conventional acid modified polyolefin. Polyolefins blended with UMEX excel in dispersibility of both pigments and fillers in resins, readily adhere to other materials, and make paints readily adhesive to resulting resins. Moreover, the products are very effective as modifiers for hot melt adhesives.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Main Chain Composition</th>
<th>Appearance</th>
<th>Viscosity mPa·s (190°C)</th>
<th>Softening Point1 °C</th>
<th>Acid Value2</th>
<th>Specific Gravity4 (20°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMEX 100TS</td>
<td>PP</td>
<td>Pale yellow powder</td>
<td>120</td>
<td>148</td>
<td>3.5</td>
<td>0.89</td>
</tr>
<tr>
<td>UMEX 110TS</td>
<td>PP</td>
<td>Pale yellow powder</td>
<td>135</td>
<td>145</td>
<td>7</td>
<td>0.89</td>
</tr>
<tr>
<td>UMEX 1001</td>
<td>PP</td>
<td>Yellow granule</td>
<td>15,000</td>
<td>153</td>
<td>26</td>
<td>0.95</td>
</tr>
<tr>
<td>UMEX 1010</td>
<td>PP</td>
<td>Yellow granule</td>
<td>6,000</td>
<td>145</td>
<td>52</td>
<td>0.95</td>
</tr>
</tbody>
</table>

1) PP: Polypropylene 2) Measured according to ASTM E28 (ring and ball method) 3) Measured according to ASTM D1386 4) ASTM D 792

### PELESTAT Products

Proprietary block copolymer composed of hydrophilic and lipophilic segments. Permanent antistatic agent. Imparting a permanent antistatic property independent on humidity right after molding (e.g. injection molding and extrusion molding). We offer wide selections of PELESTAT for polyolestes such as ABS, polyolefins or others.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Appearance</th>
<th>mp1 °C (°F)</th>
<th>MFR2 g (10min)</th>
<th>Surface Resistivity3 C</th>
<th>Td4 °C (°F)</th>
<th>Typical Applied Resins</th>
</tr>
</thead>
<tbody>
<tr>
<td>PELESTAT NC6321</td>
<td>Pale yellow pellet</td>
<td>203 (397)</td>
<td>20 (215°C)</td>
<td>1x106</td>
<td>285 (545)</td>
<td>ABS, HIPS, PBT, Nylon, PC/ABS-alloy</td>
</tr>
<tr>
<td>PELESTAT NC7530</td>
<td>Pale yellow pellet</td>
<td>176 (349)</td>
<td>10 (190°C)</td>
<td>2x103</td>
<td>290 (536)</td>
<td>Polystyrenes such as MS</td>
</tr>
<tr>
<td>PELESTAT 300</td>
<td>Pale yellow pellet</td>
<td>135 (275)</td>
<td>30 (190°C)</td>
<td>1x106</td>
<td>240 (464)</td>
<td>Polylefins</td>
</tr>
<tr>
<td>PELESTAT 230</td>
<td>Pale yellow pellet</td>
<td>163 (325)</td>
<td>12 (190°C)</td>
<td>5x107</td>
<td>250 (482)</td>
<td>Polylefins</td>
</tr>
<tr>
<td>PELESTAT VH230</td>
<td>Pale yellow pellet</td>
<td>163 (325)</td>
<td>9 (190°C)</td>
<td>5x107</td>
<td>250 (482)</td>
<td>For films or sheets of polylefins, etc.</td>
</tr>
</tbody>
</table>

1) Melting point 2) ASTM D 1238 (under 21.18N) 3) ASTM D 257 4) Starting thermal degradation temperature, measured by TG-DTA, in the air

### PELECTRON Products

Permanent antistatic agent with lower-resistivity type of PELESTAT. Imparting excellent antistatic properties to electrostatic diffusion region (surface resistivity 1010-1012Ω) and preventing problems caused by static electricity including destruction of electronic circuits, electric shock, appliance malfunctions and dust adhesion.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Appearance</th>
<th>mp1 °C (°F)</th>
<th>MFR2 g (10min)</th>
<th>Surface Resistivity3 C</th>
<th>Td4 °C (°F)</th>
<th>Typical Applied Resins</th>
</tr>
</thead>
<tbody>
<tr>
<td>PELECTRON AS</td>
<td>Pale yellow pellet</td>
<td>195 (383)</td>
<td>30 (215°C)</td>
<td>4x106</td>
<td>285 (545)</td>
<td>ABS, HIPS, PBT, Nylon, PC/ABS-alloy</td>
</tr>
<tr>
<td>PELECTRON PVL</td>
<td>Pale yellow pellet</td>
<td>135 (273)</td>
<td>15 (190°C)</td>
<td>3x106</td>
<td>250 (482)</td>
<td>For films or sheets of polylefins, etc.</td>
</tr>
</tbody>
</table>

1) Melting point 2) ASTM D 1238 (under 21.18N) 3) ASTM D 257 4) Starting thermal degradation temperature, measured by TG-DTA, in the air
### SANNIX Products

*"SANNIX" is the trade name of the first polyether polyols for polyurethane foam in Japan that we developed in 1960.*

We offer a wide variety of SANNIX for various applications such as super flexible, flexible, semi-rigid and rigid polyurethane foams.

<table>
<thead>
<tr>
<th>FG</th>
<th>Product Name</th>
<th>Composition</th>
<th>No.</th>
<th>Number Average Molecular Weight (Mn)</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FG*1</td>
<td>Product Name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SANNIX PL</td>
<td>Propylene glycol EO/PO</td>
<td>2100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td></td>
<td>● 44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td></td>
<td>● 280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
<td>● 187</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>950</td>
<td></td>
<td>● 118</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1000</td>
<td></td>
<td>● 112</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1200</td>
<td></td>
<td>● 98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2000</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000</td>
<td></td>
<td>● 35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000</td>
<td></td>
<td>● 27</td>
</tr>
<tr>
<td>3</td>
<td>SANNIX PP</td>
<td>Propylene glycol PO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td></td>
<td>● 670</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td></td>
<td>● 400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
<td>● 280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>700</td>
<td></td>
<td>● 240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1000</td>
<td></td>
<td>● 160</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1500</td>
<td></td>
<td>● 112</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000V</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3030</td>
<td></td>
<td>● 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3700M</td>
<td></td>
<td>● 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000</td>
<td></td>
<td>● 42</td>
</tr>
<tr>
<td>4</td>
<td>SANNIX GL</td>
<td>Glycerin EO/PO</td>
<td>3000</td>
<td></td>
<td>● 54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td></td>
<td>● 670</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td></td>
<td>● 400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
<td>● 280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>700</td>
<td></td>
<td>● 240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1000</td>
<td></td>
<td>● 160</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1500</td>
<td></td>
<td>● 112</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000V</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3030</td>
<td></td>
<td>● 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3700M</td>
<td></td>
<td>● 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000</td>
<td></td>
<td>● 42</td>
</tr>
<tr>
<td></td>
<td>SANNIX GP</td>
<td>Glycerin PO or EO/PO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td></td>
<td>● 670</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td></td>
<td>● 400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
<td>● 280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>700</td>
<td></td>
<td>● 240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1000</td>
<td></td>
<td>● 160</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1500</td>
<td></td>
<td>● 112</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000V</td>
<td></td>
<td>● 56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3030</td>
<td></td>
<td>● 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3700M</td>
<td></td>
<td>● 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000</td>
<td></td>
<td>● 42</td>
</tr>
</tbody>
</table>

Continued on the next page...
### NEWPOL 50HB, LB, 75H-90000, V Products

Used for wetting agent, moisturizer, releasing lubricant, deformer, raw material for lubricant or hydraulic oil, emulsion breaker or heating medium.

<table>
<thead>
<tr>
<th>FG</th>
<th>Product Name</th>
<th>Composition</th>
<th>Active Hydrogen Compound</th>
<th>Alkylene Oxide</th>
<th>No.</th>
<th>Mn&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Kinetic Viscosity [mm&lt;sup&gt;2&lt;/sup&gt;/s] (20°C)</th>
<th>Pour Point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NEWPOL 50HB</td>
<td>Monoalcohol</td>
<td>EO/PO</td>
<td>55</td>
<td>300</td>
<td>300</td>
<td>16</td>
<td>-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>510</td>
<td>510</td>
<td>43</td>
<td>-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>260</td>
<td>970</td>
<td>970</td>
<td>51</td>
<td>-49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>1,340</td>
<td>1,340</td>
<td>192</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>660</td>
<td>1,800</td>
<td>1,800</td>
<td>343</td>
<td>127</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,000</td>
<td>3,200</td>
<td>3,200</td>
<td>1,004</td>
<td>398</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5,100</td>
<td>3,750</td>
<td>3,750</td>
<td>2,283</td>
<td>925</td>
</tr>
<tr>
<td>2</td>
<td>NEWPOL LB</td>
<td>Monoalcohol</td>
<td>PO</td>
<td>65</td>
<td>340</td>
<td>340</td>
<td>18</td>
<td>-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>285</td>
<td>1,170</td>
<td>1,170</td>
<td>161</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>300X</td>
<td>1,170</td>
<td>1,170</td>
<td>171</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>385</td>
<td>1,480</td>
<td>1,480</td>
<td>190</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>625</td>
<td>1,670</td>
<td>1,670</td>
<td>325</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>650X</td>
<td>1,670</td>
<td>1,670</td>
<td>344</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,715</td>
<td>2,390</td>
<td>2,390</td>
<td>980</td>
<td>335</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,800X</td>
<td>2,390</td>
<td>2,390</td>
<td>1,014</td>
<td>351</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,000</td>
<td>3,070</td>
<td>3,070</td>
<td>1,665</td>
<td>610</td>
</tr>
<tr>
<td>2</td>
<td>NEWPOL 75H</td>
<td>Hexylene glycol</td>
<td>EO/PO</td>
<td>90000</td>
<td>14,000</td>
<td>14,000</td>
<td>56,200</td>
<td>19,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10-C</td>
<td>2,240</td>
<td>2,240</td>
<td>3,300*&lt;sup&gt;4&lt;/sup&gt;-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22F&lt;sup&gt;5&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>1,950</td>
<td></td>
</tr>
</tbody>
</table>

### NEWPOL PE Products

Used for detergent, raw-material for detergent, quasi-drugs, textile agent, emulsifier, dispersant, solubilizer or antistatic agent.

<table>
<thead>
<tr>
<th>FG</th>
<th>Product Name</th>
<th>Composition</th>
<th>Property</th>
<th>No.</th>
<th>Appearance (20±5°C)</th>
<th>Color (hazen)</th>
<th>Cloud Point °C</th>
<th>Freezing Point °C</th>
<th>Mn&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NEWPOL PE</td>
<td>Polyoxyethylene - Polyoxypolypropylene Block Polymer</td>
<td>34</td>
<td>Colorless liquid</td>
<td>10</td>
<td>63</td>
<td>-1</td>
<td>1,700</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61</td>
<td>Colorless liquid</td>
<td>10</td>
<td>24</td>
<td>-30</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>62</td>
<td>Colorless liquid</td>
<td>10</td>
<td>30</td>
<td>-4</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>64</td>
<td>Colorless paste</td>
<td>10</td>
<td>59</td>
<td>15</td>
<td>3,100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>68</td>
<td>White flake</td>
<td>10&lt;sup&gt;2&lt;/sup&gt;</td>
<td>113&lt;sup&gt;3&lt;/sup&gt;</td>
<td>53</td>
<td>8,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>71</td>
<td>Colorless liquid</td>
<td>10</td>
<td>20</td>
<td>-30</td>
<td>2,200</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>74</td>
<td>Colorless paste</td>
<td>10</td>
<td>56</td>
<td>15</td>
<td>3,100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75</td>
<td>Colorless paste</td>
<td>10</td>
<td>69</td>
<td>17</td>
<td>3,500</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>78</td>
<td>White flake</td>
<td>10&lt;sup&gt;2&lt;/sup&gt;</td>
<td>110&lt;sup&gt;3&lt;/sup&gt;</td>
<td>54</td>
<td>9,400</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>108</td>
<td>White flake</td>
<td>10&lt;sup&gt;2&lt;/sup&gt;</td>
<td>105&lt;sup&gt;3&lt;/sup&gt;</td>
<td>57</td>
<td>16,000</td>
<td></td>
</tr>
</tbody>
</table>

### NEWPOL PP, GP Products

Used as wetting agent for cosmetics, moisturizer, surfactants, raw material for cosmetics, surfactants, synthetic lubricating oils or releasing lubricant.

<table>
<thead>
<tr>
<th>FG</th>
<th>Product Name</th>
<th>Composition</th>
<th>Property</th>
<th>No.</th>
<th>Appearance (20±5°C)</th>
<th>pH</th>
<th>Viscosity [mPa·s] (25°C)</th>
<th>Mn&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Specific Gravity (20/20°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NEWPOL PP</td>
<td>Propylene oxide adduct of propylene glycol</td>
<td>200</td>
<td>Colorless liquid</td>
<td>6.0</td>
<td>60</td>
<td>200</td>
<td>1.015</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>Colorless liquid</td>
<td>6.0</td>
<td>70</td>
<td>400</td>
<td>1.013</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>85</td>
<td>600</td>
<td>1.020</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>950</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>140</td>
<td>950</td>
<td>1.009</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>145</td>
<td>1,000</td>
<td>1.009</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,200</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>165</td>
<td>1,150</td>
<td>1.008</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>305</td>
<td>2,000</td>
<td>1.006</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>590</td>
<td>3,200</td>
<td>1.005</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>950</td>
<td>4,150</td>
<td>1.004</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>NEWPOL GP</td>
<td>Propylene oxide adduct of glycercin</td>
<td>250</td>
<td>Colorless liquid</td>
<td>6.0</td>
<td>950</td>
<td>250</td>
<td>1.088</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>Colorless liquid</td>
<td>6.0</td>
<td>365</td>
<td>420</td>
<td>1.056</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>275</td>
<td>600</td>
<td>1.042</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>255</td>
<td>1,050</td>
<td>1.025</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>1,000</td>
<td>3,000</td>
<td>1.012</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,000</td>
<td>Colorless liquid</td>
<td>6.5</td>
<td>660</td>
<td>4,000</td>
<td>1.011</td>
<td></td>
</tr>
</tbody>
</table>

*1 Number of functional group  *2 Number average molecular weight  *3 Measured in a sealed tube  *4 Number average molecular weight  
*5 Solid at 20°C  *6 Molten, measured at 110°C
### PEG Products (Polyethylene glycol)

Used in many industries, such as intermediates for the manufacture of surfactants, plasticizers, lubricants, etc.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Mn</th>
<th>OHV</th>
<th>Color (aqueous)</th>
<th>Appearance</th>
<th>pH</th>
<th>Freezing Point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEG-200</td>
<td>200</td>
<td>563</td>
<td>10</td>
<td>Colorless liquid</td>
<td>5.5</td>
<td>-35</td>
</tr>
<tr>
<td>PEG-300</td>
<td>300</td>
<td>372</td>
<td>10</td>
<td>Colorless liquid</td>
<td>5.5</td>
<td>-10</td>
</tr>
<tr>
<td>PEG-400</td>
<td>400</td>
<td>281</td>
<td>10</td>
<td>Colorless liquid</td>
<td>5.5</td>
<td>7</td>
</tr>
<tr>
<td>PEG-600</td>
<td>600</td>
<td>187</td>
<td>10</td>
<td>Colorless liquid</td>
<td>5.5</td>
<td>20</td>
</tr>
<tr>
<td>PEG-1000</td>
<td>1,000</td>
<td>112</td>
<td>10</td>
<td>Wax</td>
<td>6.5</td>
<td>37</td>
</tr>
<tr>
<td>PEG-1500</td>
<td>550</td>
<td>207</td>
<td>10</td>
<td>Paste</td>
<td>5.5</td>
<td>40</td>
</tr>
<tr>
<td>PEG-1540</td>
<td>1,450</td>
<td>79</td>
<td>10</td>
<td>Wax</td>
<td>6.0</td>
<td>45</td>
</tr>
<tr>
<td>PEG-2000</td>
<td>2,000</td>
<td>56</td>
<td>10</td>
<td>Wax</td>
<td>5.5</td>
<td>51</td>
</tr>
<tr>
<td>PEG-400N</td>
<td>3,100</td>
<td>36</td>
<td>10</td>
<td>White flake</td>
<td>6.5</td>
<td>55</td>
</tr>
<tr>
<td>PEG-400S</td>
<td>3,400</td>
<td>33</td>
<td>10</td>
<td>White flake</td>
<td>6.5</td>
<td>56</td>
</tr>
<tr>
<td>PEG-600P</td>
<td>8,300</td>
<td>14</td>
<td>10</td>
<td>White powder</td>
<td>7.0</td>
<td>61°</td>
</tr>
<tr>
<td>PEG-600S</td>
<td>8,300</td>
<td>14</td>
<td>10</td>
<td>White flake</td>
<td>6.5</td>
<td>61°</td>
</tr>
<tr>
<td>PEG-10000</td>
<td>11,000</td>
<td>10</td>
<td>10</td>
<td>White flake</td>
<td>6.5</td>
<td>62°</td>
</tr>
<tr>
<td>PEG-13000</td>
<td>13,000</td>
<td>8.6</td>
<td>10</td>
<td>White flake</td>
<td>6.5</td>
<td>62°</td>
</tr>
<tr>
<td>PEG-20000</td>
<td>20,000</td>
<td>5.6</td>
<td>10</td>
<td>White flake</td>
<td>7.0</td>
<td>63°</td>
</tr>
<tr>
<td>PEG-20000P</td>
<td>20,000</td>
<td>5.6</td>
<td>10</td>
<td>White powder</td>
<td>7.0</td>
<td>63°</td>
</tr>
</tbody>
</table>

*1 Number average molecular weight/calculated by OHV
*2 Hydroxyl value by acetylation
*3 5 wt % aq solution
*4 25 wt % aq solution
*5 Melt point

Details are described in following leaflets (PRODUCT OUTLINE) depending industries. Besides, some products have Individual brochures or Products brochures. (Please refer to the INDEX)
# Examples of Sanyo Chemical Nonionic Surfactants  
# The List of their HLB

HLB (Hydrophilic-Lipophilic Balance) is a numerical value which represents a balance between hydrophilic groups and lipophilic groups in molecules of surfactants from 0 to 20. The higher the HLB value, the more hydrophilic (water-soluble) the surfactant.

## HLB

<table>
<thead>
<tr>
<th>HLB</th>
<th>Synthetic Alcohol-based</th>
<th>Natural Alcohol-based</th>
<th>Fatty Acid Ester-based</th>
<th>Pluronic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NAROACTY SANNONIC SEDORAN</td>
<td>EMULMIN</td>
<td>ICNET</td>
<td>NEWPOL</td>
</tr>
<tr>
<td></td>
<td>Primary Alcohol</td>
<td>Primary Alcohol</td>
<td>Secondary Alcohol</td>
<td>Primary Alcohol</td>
</tr>
<tr>
<td>1.8 - 2.0</td>
<td>ID-40</td>
<td>SS-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 - 4.3</td>
<td>CL-20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.7</td>
<td>ID-40</td>
<td>SS-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0 - 6.2</td>
<td>SF-506</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>CL-40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0 - 8.2</td>
<td>ID-40</td>
<td>SS-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3 - 8.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.9 - 9.0</td>
<td>CL-40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0 - 10.2</td>
<td>CL-56</td>
<td>SS-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.5 - 10.6</td>
<td>SS-50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.7</td>
<td>CL-70</td>
<td>FN-80</td>
<td>FF-180</td>
<td></td>
</tr>
<tr>
<td>12.0</td>
<td>SS-70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.3 - 12.4</td>
<td>ID-60</td>
<td></td>
<td>FF-200</td>
<td></td>
</tr>
<tr>
<td>12.6</td>
<td>CL-85</td>
<td>FN-100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.9 - 13.0</td>
<td>CL-95</td>
<td>DE-70</td>
<td>SS-90</td>
<td></td>
</tr>
<tr>
<td>13.1 - 13.2</td>
<td>CL-100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.3 - 13.4</td>
<td>CL-100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.8 - 14.0</td>
<td>FN-140</td>
<td>FF-220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.1 - 14.3</td>
<td>CL-120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.5</td>
<td>SS-120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.7 - 14.9</td>
<td>CL-140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0 - 15.3</td>
<td>CL-160</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.5 - 15.7</td>
<td>CL-200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.6 - 16.7</td>
<td>CL-400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## How to see the table

The second line shows the trade names of products, and each product number is in the corresponding cell in the following lines after line 4. For example, the cell at column 3/line 11 represents NAROACTY ID-40. The cell at column 6/line 11 represents SANNONIC SS-30.
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Page</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACHLOR A-5000</td>
<td>p3, 21, 58</td>
<td>PRODUCT OUTLINE 2</td>
</tr>
<tr>
<td>ACARABON DA-75</td>
<td>p5, 9, 15, 57</td>
<td></td>
</tr>
<tr>
<td>ACARABON L-400</td>
<td>p15, 35, 57</td>
<td></td>
</tr>
<tr>
<td>ACARABON L-410</td>
<td>p3, 21, 58</td>
<td></td>
</tr>
<tr>
<td>ACARABON LCA</td>
<td>p3, 21, 57</td>
<td></td>
</tr>
<tr>
<td>ACARABON NS</td>
<td>p3, 21, 57</td>
<td></td>
</tr>
<tr>
<td>ACETINOL</td>
<td>p3, 5, 9, 19, 25</td>
<td></td>
</tr>
<tr>
<td>ACETINOL H</td>
<td>p3, 5, 9, 19, 25</td>
<td></td>
</tr>
<tr>
<td>ACETINOL L</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL M</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL N</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL O</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL P</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL Q</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL R</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL S</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL T</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL U</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL V</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL W</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL X</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL Y</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACETINOL Z</td>
<td>p3, 5, 11, 17, 61</td>
<td></td>
</tr>
<tr>
<td>ACYLIC</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AL</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AM</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AN</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AP</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AS</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AT</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AU</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AV</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AW</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AX</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AY</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC AZ</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC B</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC C</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC D</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC E</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC F</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC G</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC H</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC I</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC J</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC K</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC L</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC M</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC N</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC O</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC P</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC Q</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC R</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC S</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC T</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC U</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC V</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC W</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC X</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC Y</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
<tr>
<td>ACYLIC Z</td>
<td>p31, 51, 67</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The table represents a sample of the data extracted from the document. The complete table can be found in the image provided.
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Page</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWPOL GP</td>
<td>p25, 29, 49, 64, 82</td>
<td>PRODUCT OUTLINE 4 Products brochure</td>
</tr>
<tr>
<td>NEWPOL GB</td>
<td>p23, 25, 37, 43, 49, 68, 81</td>
<td>PRODUCT OUTLINE 1 Products brochure</td>
</tr>
<tr>
<td>NEWPOL MP-5</td>
<td>p49, 73</td>
<td>-</td>
</tr>
<tr>
<td>NEWPOL NB-300</td>
<td>p51</td>
<td>-</td>
</tr>
<tr>
<td>NEWPOL NSG</td>
<td>p7, 23, 25, 37, 49, 68, 82</td>
<td>PRODUCT OUTLINE 4 Products brochure</td>
</tr>
<tr>
<td>NEWPOL PE</td>
<td>p5, 7, 11, 13, 17, 25, 27, 37, 41, 49, 63, 81</td>
<td>PRODUCT OUTLINE 2 Products brochure</td>
</tr>
<tr>
<td>NEWPOL PP</td>
<td>p7, 25, 49, 61, 82</td>
<td>-</td>
</tr>
<tr>
<td>NEWPOL SBF</td>
<td>p13, 61</td>
<td>-</td>
</tr>
<tr>
<td>NEWPOL TL</td>
<td>p7, 23, 25, 37, 63</td>
<td>-</td>
</tr>
<tr>
<td>NEWPOL V</td>
<td>p7, 23, 25, 37</td>
<td>PRODUCT OUTLINE 4 Products brochure</td>
</tr>
<tr>
<td>NSA-17</td>
<td>p3, 17</td>
<td>PRODUCT OUTLINE 2 Individual brochure</td>
</tr>
<tr>
<td>NSA-400L</td>
<td>p3</td>
<td>PRODUCT OUTLINE 2 Individual brochure</td>
</tr>
<tr>
<td>OSMORIN DA-50</td>
<td>p43, 59</td>
<td>PRODUCT OUTLINE 2</td>
</tr>
</tbody>
</table>
Subsidiaries and Affiliates

San Nopco Co., Ltd.
Tel: +81-3-3279-3030 Fax: +81-3-3246-0550 http://www.sannopco.co.jp/
Manufacture and sales of industrial agents for pulp & paper, paints, latex, ceramics, and electronics

Coating Chemicals (Aqueous)
- Defoamer
- Dispersant
- Wetting agent/Emulsifier
- Rheology modifier
- Water retention aid/Rheology improver
- Surface control agent
- Leveling agent/Tackifier
- Preservative/Anti-fouling agent
- Foam stabilizer/Flame preventive
- Water repellent agent/
- Fluorescence brightening Improver
- Surface sizing agent/Flame retardant
- Conducting agent/
- Dimensional stabilizer

Coating Chemicals (Non aqueous)
- Defoamer
- Dispersant
- Leveling agent/Tackifier
- Ultraviolet curing compound

Process Chemicals
- Defoamer
  - for resin/Rubber emulsion/Latex manufacturing process
  - for electronic component manufacturing process
- for exterior siding board making process
- for cement
- for metal treatment process
- for water waste treatment
- for paper manufacturing process
- Kraft pulp washing process
- Paper making process
- Pulp cleaning process
- Bleaching process
- Waste water treatment

Coating Chemicals (Aqueous)
- Defoamer
  - for fine ceramics manufacturing process
  - for pigment (inorganic, organic)
- Dispersant
- Lubricant for fine ceramics manufacturing process
- Emulsifier
- Conducting agent
- Surface appearance improver

Coating Chemicals (Non aqueous)
- Defoamer
- Dispersant
- Leveling agent/Tackifier
- Ultraviolet curing compound

Photo-Acid Generators
- Cationic photo initiators or photo-acid generators of triaryl sulfonium salt-type with PF6, SbF6 or special phosphate anion.
- Nearly not containing bis-sulfonium salt
- Suits for photo-curing either clear or pigmented formulations

Super Base Compounds [DBU, DBN]
- Used for various organic synthesis
- Accelerating polymerization, cross-linking reactions

Urethane Catalysts
- Used in polyurethane for coatings, adhesives, elastomers or sealants

Other
- Water soluble rust inhibitor
- Scorch inhibitor
- Desiccant for urethane coatings, sealants

Epoxy Curing Accelerators
- For epoxy molding encapsulation for LSI, LED and other electronic/electric devices
- Used for epoxy resin prepreg material
- For powder coating

SDP Global Co., Ltd.
Tel: +81-3-5200-1212 Fax: +81-3-5200-3318
Manufacture and sales of superabsorbent polymers (SAP) for hygiene material uses such as the disposable diapers and napkins

SANWET series
AQUAPEARL series

San-Apro Ltd.
Tel: +81-3-3241-2491 Fax: +81-3-3245-0765 http://www.san-apro.co.jp/
Manufacture and sales of photo-acid generators, DBU and DBN super base compounds, urethane catalysts, curing accelerators for epoxy resins, watersoluble rust inhibitors, etc.

Photo-Acid Generators
- Cationic photo initiators or photo-acid generators of triaryl sulfonium salt-type with PF6, SbF6 or special phosphate anion.
- Almost not containing bis-sulfonium salt
- Suits for photo-curing either clear or pigmented formulations

Super Base Compounds [DBU, DBN]
- Used for various organic synthesis
- Accelerating polymerization, cross-linking reactions

Urethane Catalysts
- Used in polyurethane for coatings, adhesives, elastomers or sealants

Other
- Water soluble rust inhibitor
- Scorch inhibitor
- Desiccant for urethane coatings, sealants

Epoxy Curing Accelerators
- For epoxy molding encapsulation for LSI, LED and other electronic/electric devices
- Used for epoxy resin prepreg material
- For powder coating

SANWET series
AQUAPEARL series

San-Petrochemical Co., Ltd.
Tel: +81-3-5200-3561 Fax: +81-3-3245-1605
Manufacture of EPDM rubber materials (e.g. ENB: Ethylidene norborne) or Specialized epoxy materials (e.g. VCH: Vinyl cyclohexene)