Adhesives and Sealants
for Handheld Devices and Displays
Henkel is your total solution provider for adhesives, sealants and functional coatings.

Through close customer partnership, industry know-how and engineering support, we enable innovative design for handheld devices and displays.

**Global Capabilities**
We are the global technology leader, with an extensive network to support the customers’ value stream.

**Design Partnership**
Our experienced team of engineers provides documented design and application support.

**Engineering Support**
With unsurpassed development, engineering and field support, Henkel provides the expertise to empower customers to improve quality, efficiency and innovation.

**Customer Intimacy**
Through close collaboration and intimate knowledge of customer applications and processes, Henkel creates exciting solutions that enable innovation.

**Innovation Leader**
As the innovation leader in sealing, bonding and coating, Henkel delivers solutions to meet fast design changes and developmental challenges.

**Achieving more with less**
Our commitment to leadership in sustainability is deeply embedded in our values. With our revised Sustainability Strategy for 2030, we are building on our strong track record. At the same time, we are aiming to address one of the central future challenges: to decouple growth from resource consumption. At the heart of this strategy is therefore the simple, yet challenging, ambition: to achieve more with less. It aims to create more value for our customers, consumers, communities and the company alike, while simultaneously reducing the environmental footprint.
## Mobile Device Applications

### Other Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>Anti-scratch coating</th>
<th>Functional Coatings</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Clear coating for plastic cover</td>
<td>Anti-scratch</td>
</tr>
</tbody>
</table>

#### Application: Cushion / sealing

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Cured-in-Place Gaskets</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Good bonding strength</td>
</tr>
</tbody>
</table>

We are currently developing several new formulations for this application. Contact us for samples or technical information.

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>Keypad and side key bonding</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT</td>
<td>Cyanoacrylate Adhesives</td>
</tr>
<tr>
<td>BENEFITS</td>
<td>High adhesion on flexible and inexact substrates with small bond areas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>Battery cell molding</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT</td>
<td>TECHNOMELT® Molding</td>
</tr>
<tr>
<td>BENEFITS</td>
<td>Water tightness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>Logo bonding</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT</td>
<td>PUR Hotmelt Adhesives</td>
</tr>
<tr>
<td>BENEFITS</td>
<td>High strength</td>
</tr>
</tbody>
</table>

### Application: Touch panel / windows bonding to cover

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PUR Hotmelt Adhesives</th>
<th>2-Part Acrylic Adhesives</th>
<th>2-Part Polyurethane Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Structural strength</td>
<td>Quick assembly and processing</td>
<td>Impact and shear loading resistance</td>
</tr>
</tbody>
</table>

### Application: Direct bonding / cover lens bonding

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Liquid Optically Clear Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Optical clarity with high bonding strength</td>
</tr>
</tbody>
</table>

### Application: Metal and plastic bonding

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PUR Hotmelt Adhesives</th>
<th>2-Part Acrylic Adhesives</th>
<th>2-Part Polyurethane Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Structural strength</td>
<td>Quick assembly and processing</td>
<td>Impact and shear loading resistance</td>
</tr>
</tbody>
</table>

### Application: Camera lens bonding

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PUR Hotmelt Adhesives</th>
<th>2-Part Acrylic Adhesives</th>
<th>Cyanoacrylate Adhesives</th>
<th>UV Acrylic Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>High strength</td>
<td>Thin bondlines</td>
<td>Easy operation and reliability</td>
<td></td>
</tr>
</tbody>
</table>

### Application: Plastic / metal trim bonding

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PUR Hotmelt Adhesives</th>
<th>2-Part Acrylic Adhesives</th>
<th>2-Part Polyurethane Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Structural strength</td>
<td>Quick fixture with molding process</td>
<td>Impact and shear loading resistance</td>
</tr>
</tbody>
</table>

### Application: Overmolding / insert molding

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Overmolding Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENEFITS</td>
<td>Structural strength</td>
</tr>
</tbody>
</table>
Tablet Applications

1. **APPLICATION**: Direct bonding / cover lens bonding  
   **PRODUCT**: Liquid Optically Clear Adhesives  
   **BENEFITS**:  
   - Optical clarity with high bonding strength  
   - Eliminate air bubbles during lamination  
   - Flexible with low corrosion  
   - LCD compatible  
   - Ink step compatible

2. **APPLICATION**: Touch panel bonding to cover  
   **PRODUCT**:  
   - 2-Part Acrylic Adhesives  
   - 2-Part Polyurethane Adhesives  
   - PUR Hotmelt Adhesives  
   **BENEFITS**:  
   - Structural strength  
   - Quick assembly and processing  
   - Impact and shear loading resistance

3. **APPLICATION**: Camera lens / logo bonding  
   **PRODUCT**:  
   - 2-Part Acrylic Adhesives  
   - 2-Part Polyurethane Adhesives  
   - PUR Hotmelt Adhesives  
   - Silicone Adhesives  
   - UV Acrylic Adhesives  
   **BENEFITS**:  
   - Small dispense volumes  
   - Suitable for visible bondlines  
   - Low outgassing

4. **APPLICATION**: Back cover bonding / inside bracket bonding  
   **PRODUCT**:  
   - 2-Part Acrylic Adhesives  
   - 2-Part Polyurethane Adhesives  
   - PUR Hotmelt Adhesives  
   **BENEFITS**:  
   - Structural strength  
   - Quick assembly and processing  
   - Impact and shear loading resistance
Laptop Applications

Other Applications

1. APPLICATION  
   - Direct bonding / cover lens bonding
   - PRODUCT: Liquid Optically Clear Adhesives
   - BENEFITS:
     - Structural strength
     - Quick assembly and processing
     - Impact and shear loading resistance

2. APPLICATION  
   - Camera lens / logo bonding
   - PRODUCT: 2-Part Acrylic Adhesives, 2-Part Polyurethane Adhesives, PUR Hotmelt Adhesives, Silicone Adhesives, UV Acrylic Adhesives
   - BENEFITS:
     - Small dispense volumes
     - Suitable for visible bondlines
     - Low outgassing

3. APPLICATION  
   - Touch panel / window bonding to LCD bezel
   - PRODUCT: 2-Part Acrylic Adhesives, 2-Part Polyurethane Adhesives
   - BENEFITS:
     - Structural strength
     - Quick assembly and processing
     - Impact and shear loading resistance

4. APPLICATION  
   - Overmolding / insert molding
   - PRODUCT: Overmolding Adhesives
   - BENEFITS:
     - Structural strength
     - Fast fixture with molding process
     - Impact and shear loading resistance

5. APPLICATION  
   - Top case bonding
   - PRODUCT: 2-Part Acrylic Adhesives
   - BENEFITS:
     - Bonding dissimilar substrates
     - High strength with minimal bond area
     - Resistance to impact, bending and fatigue

6. APPLICATION  
   - Sub-assembly and sealing
   - PRODUCT: 2-Part Acrylic Adhesives, Cyanoacrylate Adhesives
   - BENEFITS:
     - Bond to plastic and metal housings and clips
     - Thermal stability
     - Quick fixturing

7. APPLICATION  
   - Battery bonding and sealing
   - PRODUCT: PUR Hotmelt Adhesives, Cyanoacrylate Adhesives
   - BENEFITS:
     - Bond to plastic and metal housings and clips
     - Thermal stability
     - Quick fixturing

We are currently developing several new formulations for this application. Contact us for samples or technical information.
LCD TV Applications

Other Applications

Application
Panel to frame bonding (ABS + epoxy ink)
Product
PUR Hotmelt Adhesives
Benefits
- Good strength
- High resilience
- Good endurance against aging

Application
Panel to frame bonding (PC + PC)
Product
UV Acrylic Adhesives
Benefits
- Fast cure
- Good bonding strength

Application
Panel to frame bonding (SS + SS, Al + SS, Al + PMMA)
Product
2-Part Acrylic Adhesives
Benefits
- High bonding strength
- Good endurance against aging

Application
Anti-dust, waterproofing agent between LCD module and top glass
Product
Silicone Adhesives
Cured-in-Place Gaskets
Liquid Optically Clear Adhesives
Benefits
- Good water tightness
- Good endurance against aging
- Disassembly
- High strength
- High impact

Application
TV stand bonding (ABS + ink glass)
Product
PUR Hotmelt Adhesives
Benefits
- High bonding strength
- Good endurance against aging

Application
TV stand bonding (PMMA + PC)
Product
UV Acrylic Adhesives
Benefits
- Fast cure
- Good strength

Application
LED rail holding
Product
2-Part Acrylic Adhesives
Thermally Conductive Acrylic Adhesives
Benefits
- High thermal conductivity
- High bonding strength
- Good endurance against aging

Application
Threadlocking
Product
Threadlocking Adhesives
Benefits
Disassembly
Anti-vibration, anti-loosening

Application
Reinforced ribs bonding
Product
2-Part Acrylic Adhesives
Benefits
- High bonding strength
- Good endurance against aging

Application
Bottom chassis bonding
Product
2-Part Acrylic Adhesives
Benefits
- High heat conductivity
- Vibrating absorption
- High bonding strength
- Good endurance against aging
As a part of your development team, Henkel aims to find high-quality, cost-efficient design solutions for your challenging application requirements in peripherals assembly.
## Technical Solutions

### Typical Applications

#### Touch Panel / Window to Frame Assembly

<table>
<thead>
<tr>
<th>DEVICE TYPE</th>
<th>DIMENSIONS</th>
<th>TECHNICAL CHALLENGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>3 - 6 inch</td>
<td>Fine dispensing beads, high impact resistance at thin bonding line</td>
</tr>
<tr>
<td>Tablet</td>
<td>7 - 11 inch</td>
<td>High impact resistance at thin bonding line</td>
</tr>
<tr>
<td>LCD TV</td>
<td>20 - 70 inch</td>
<td>Flexible &amp; easy assembling process</td>
</tr>
</tbody>
</table>

#### Case to Frame Assembly

<table>
<thead>
<tr>
<th>DEVICE TYPE</th>
<th>DIMENSIONS</th>
<th>TECHNICAL CHALLENGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet</td>
<td>7 - 11 inch</td>
<td>High productivity, high reliability</td>
</tr>
<tr>
<td>Laptop</td>
<td>12 - 15 inch</td>
<td>High productivity, less warpage, high reliability</td>
</tr>
<tr>
<td>LCD TV</td>
<td>20 - 70 inch</td>
<td>Flexible &amp; easy assembly process</td>
</tr>
</tbody>
</table>

### Technical Solutions

#### STRUCTURAL BONDING

- **PUR Hotmelt Adhesives**
- **UV Pre-Activated PUR Hotmelt Adhesives**
- **2-Part Acrylic Adhesives**
- **2-Part Polyurethane Adhesives**

#### MOLDING

- **Overmolding**
- **Structural Tape**

#### CHARACTERISTICS

<table>
<thead>
<tr>
<th>LOCTITE® Products</th>
<th>Bonding Strength</th>
<th>Impact Resistance</th>
<th>Fast Fixture</th>
<th>Simple / Flexible Process</th>
<th>Thinner Bondline</th>
</tr>
</thead>
<tbody>
<tr>
<td>3541</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3580</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3572</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3573</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### LOCTITE® Products

- **HF8075LV**: Excellent overall performance
- **HF368**: Instant fixture, thinner bonding line
- **OM4101**: High bonding performance, solvent based
- **HHD 8160**: Ultra fast cure, excellent reliability

### Application Overview

#### DEVICE TYPE

- **Smartphone**: 3 - 6 inch
- **Tablet**: 7 - 11 inch
- **LCD TV**: 20 - 70 inch

#### DIMENSIONS

- **Smartphone**: 3 - 6 inch
- **Tablet**: 7 - 11 inch
- **LCD TV**: 20 - 70 inch

#### TECHNICAL CHALLENGE

- **Fine dispensing beads, high impact resistance at thin bonding line**
- **High impact resistance at thin bonding line**
- **Flexible & easy assembling process**

#### Legend

- Fair
- Good
- Excellent

### Assembly Applications
Typical Applications

Assembly of Sub-Assemblies

**APPLICATION OVERVIEW**

<table>
<thead>
<tr>
<th>DEVICE TYPE</th>
<th>TECHNICAL CHALLENGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/O Components Bonding</td>
<td>Narrow bonding area, off-site issue control</td>
</tr>
<tr>
<td>Camera Module / Lens Bonding</td>
<td>High impact resistance</td>
</tr>
<tr>
<td>Magnet / Metal Logo Bonding</td>
<td>High bonding strength, easy process</td>
</tr>
</tbody>
</table>

**Technical Solutions**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>STRUCTURAL BONDING</th>
<th>INSTANT BONDING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PUR Hotmelt Adhesives</td>
<td>UV Pre-Activated PUR Hotmelt Adhesives</td>
</tr>
<tr>
<td>Bonding Strength</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Fast Fixture</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Simple / Flexible Process</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Thinner Bondline</td>
<td>▲</td>
<td>▲</td>
</tr>
</tbody>
</table>

**LOCTITE® Products**

- 3542: Excellent overall performance
- 3580: Instant fixture, thinner bondline
- HF8150R: Fast cure, excellent reliability
- HF368: Instant fixture, thinner bonding line
- 3212: Fast process, superior with tough and durable bonding
- Hysol E-20HP: Toughened, medium viscosity
- HF4204: Toughened, thermally resistant
- 3572: High reliability on plastics substrates
- HHD 3581: Instant fixture, excellent impact resistance
- HF8075LV: Excellent overall performance
- HF435: Toughened, surface insensitive
- HHD 3575: Black color, better reliability
- HF3205: Light cure, rapid fixing

**Legend:**
- ▲: Fair
- ▲ ▲: Moderate
- ▲ ▲ ▲: Good
- ▲ ▲ ▲ ▲: Excellent

Today's handheld devices and displays: loaded with amazing technologies. We think you'll find these truly impressive.
2-Part Acrylic Adhesives

- Superior shear strength
- Excellent impact resistance
- High temperature / humidity performance
- Fast fixture
- Halogen-free

Specially formulated to provide tough, long-lasting bonds to most surfaces, including steel, galvanized steel, aluminum, sheet metal, stainless steel, plastics and composites.

Capable of reducing or replacing the need for threaded fasteners, welds or rivets, resulting in a lower cost assembly.

NEW LOCTITE® HHD 8160 Structural Adhesive

LOCTITE® HHD 8160 Structural Adhesive has been specifically formulated to deliver lower temperature fast fixture processing capability. It processes excellent adhesion and damp heat resistance to magnesium aluminum alloys, anodized aluminum and PC/ABS blends.

- Ultra fast fixture at lower temperature
- Superior shear strength
- Excellent impact strength
- High temperature / humidity resistance
- Phthalate-free
- Halogen-free

Properties Comparison

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® HFB15oR</th>
<th>LOCTITE® HF8150R</th>
<th>LOCTITE® HHD 8160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mix Ratio (Resin : Hardener)</td>
<td>10 : 1</td>
<td>10 : 1</td>
<td>10 : 1</td>
</tr>
<tr>
<td>Open Time</td>
<td>2 - 3 minutes</td>
<td>3 - 4 minutes</td>
<td>2 - 3 minutes</td>
</tr>
<tr>
<td>Fixture Speed at 60°F to 80°F</td>
<td>60 - 90 seconds</td>
<td>60 - 90 seconds</td>
<td>60 - 80 seconds</td>
</tr>
<tr>
<td>Metal to Metal</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Metal to Plastic</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Aging Resistance</td>
<td>Good</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Henkel Dispensing Equipment</td>
<td>LOCTITE® 50 ml Dual Cartridge Dispense System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>2ºC to 8ºC</td>
<td>2ºC to 8ºC</td>
<td>2ºC to 8ºC</td>
</tr>
</tbody>
</table>

Fixture Time

Lap Shear Strength

- Before Aging
- High Temperature
- High Humidity
- Thermal Shock
- Thermal Cycle
2-Part Acrylic Hybrid Adhesives

**NEW**

**LOCTITE® HHD 8900 Structural Adhesive**

For small parts bonding where long open time minimizes cure in mix nozzle. For large parts bonding where long open time maximizes work life and fixture can be achieved quickly with heat.

- Henkel patented 2-part acrylic hybrid technology*
- Long open time (~ 10 minutes) with fast cure (45-60 seconds) at 60°C
- Excellent tensile strength
- High temperature / humidity resistance
- Halogen-free & phthalate-free
- Less odor

* Patent pending

**Properties**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® HHD 8900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Base</td>
<td>Acrylic</td>
</tr>
<tr>
<td>Color (Cured)</td>
<td>Light green</td>
</tr>
<tr>
<td>Full Cure Time</td>
<td>24 hours @ 23°C</td>
</tr>
<tr>
<td>Mix Ratio (by Volume)</td>
<td>1:1</td>
</tr>
<tr>
<td>Side Impact Strength</td>
<td>&gt; 21 J</td>
</tr>
<tr>
<td>Physical Form</td>
<td>Gel</td>
</tr>
<tr>
<td>Shear Strength on SS304 @ Room Temperature</td>
<td>3,770 pound-force per inch²</td>
</tr>
<tr>
<td>Shelf Life</td>
<td>12 months @ 4°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>4°C, refrigerator required for storage</td>
</tr>
<tr>
<td>Time to Handling Strength</td>
<td>16 - 20 minutes @ 23°C</td>
</tr>
<tr>
<td>Fixture Time @ 60°C</td>
<td>1 minute</td>
</tr>
<tr>
<td>Nozzle Life</td>
<td>11 minutes</td>
</tr>
<tr>
<td>Anti-sag</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Shear Strength**

- Stainless Steel
- Polyamide Plastic

2-Step Acrylic Adhesives

**NEW**

**LOCTITE® HF368 Structural Adhesive**

**LOCTITE® SF 7888 Accelerator**

For Bonding in High-Impact Applications

- Long open time
- Fast fixture
- Good shear strength
- Good impact strength
- Thermal cycling resistance
- Phthalate-free & halogen-free

**Properties Comparison**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Traditional 2-Part Acrylic Adhesive</th>
<th>LOCTITE® HF368 + LOCTITE® SF 7888</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>Must mix</td>
<td>2-step</td>
</tr>
<tr>
<td>Open Time</td>
<td>Standard</td>
<td>Very long</td>
</tr>
<tr>
<td>Fixture Time</td>
<td>Standard</td>
<td>Very quick</td>
</tr>
</tbody>
</table>

**TYPICAL APPLICATIONS**

Structural bonding of frames and parts.

**Longer Open Time & a Faster Fixture Time Performance under Elevated Temperatures**

**Properties**

- Henkel patented 2-part acrylic hybrid technology*
- Long open time (~ 10 minutes) with fast cure (45-60 seconds) at 60°C
- Excellent tensile strength
- High temperature / humidity resistance
- Halogen-free & phthalate-free
- Less odor

* Patent pending
PUR Hotmelt Adhesives

- One-part, solvent free
- Good adhesion to plastic, metal, glass and composite
- Fast curing
- Very thin bondlines
- Long open time
- Low cost
- Wide variety of formulations available

Cure at room temperature with moisture or reaction. Bond variety of materials such as plastics, metals and glass.

► LOCTITE® Adhesives Compared to PSA Tape

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® 3541 PUR Hotmelt Adhesive</th>
<th>LOCTITE® 3542 Cyanoacrylate Adhesive</th>
<th>Pressure Sensitive Adhesive (PSA) Tapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity (cP)</td>
<td>4,000 – 7,000</td>
<td>4,000 – 7,000</td>
<td>4,000 – 7,000</td>
</tr>
<tr>
<td>Bonding Performance*</td>
<td>High</td>
<td>High</td>
<td>Excellent</td>
</tr>
<tr>
<td>Fast Fixture</td>
<td>Ultra Fast</td>
<td>Fast</td>
<td>Standard</td>
</tr>
<tr>
<td>Open Time</td>
<td>1 – 2 minutes</td>
<td>2 – 4 minutes</td>
<td>Excellent</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Standard</td>
</tr>
<tr>
<td>Total applied cost</td>
<td>Low</td>
<td>Low</td>
<td>High (die-cutting cost)</td>
</tr>
</tbody>
</table>

* Bonding performance depends on substrates

► Properties Comparison

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® 3573 Hotmelt Adhesives</th>
<th>LOCTITE® HHD 3575 Hotmelt Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Yellow</td>
<td>Black</td>
</tr>
<tr>
<td>Viscosity (cP)</td>
<td>4,000 – 5,000</td>
<td>4,000 – 5,000</td>
</tr>
<tr>
<td>Bonding Performance*</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Fast Fixture</td>
<td>Fast</td>
<td>Ultra Fast</td>
</tr>
<tr>
<td>Open Time</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

* Bonding performance depends on substrates

► Pull Strength

- Glass / Metal, 1 hour
- PC/ABS / PMMA, 1 hour
- Glass / Metal, 24 hours
- PC/ABS / PMMA, 24 hours

PUR Hotmelt Adhesives

- Black color
- Good bonding performance on various substrates
- Good open time and fast fixture
- Good impact strength

► Product Profile / Positioning

- Reactive black hotmelt adhesives based on polyurethane prepolymers
- Provide high initial strength instantly after joining the parts
- Suitable open time for automatic or manual assembly line
- Aesthetic improvement

LOCTITE® 3573
- Ultra fast fixture
- Standard open time
- Improved bonding performance on plastics
- Long open time
UV Pre-Activated PUR Hotmelt Adhesives

**NEW**

**LOCTITE® 3580 Structural Adhesive**

**LOCTITE® HHD 3581 Structural Adhesive**

**LOCTITE® HHD 3582 Structural Adhesive**

- Instant fixture
- Fast processing
- Easier rework
- High impact resistance
- High bonding performance at ultra thin bondline
- Waterproof

**Product Profile / Positioning**

- **LOCTITE® UV Pre-Activated PUR Hotmelt Structural Adhesives**
  - UV and moisture dual-curing reactive polyurethane hotmelt adhesives
  - High initial strength instantaneously under UV radiation after joining the parts
  - Suitable open time for automatic or manual assembly line

- **LOCTITE® 3580**
  - Superior overflow control after UV exposure
  - Good impact resistance performance for application

- **LOCTITE® HHD 3581**
  - Superior gap control
  - Excellent impact resistance performance for application

- **LOCTITE® HHD 3582**
  - Superior gap control
  - Excellent impact resistance performance for application

**Characteristics**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® 3580</th>
<th>LOCTITE® 3581</th>
<th>LOCTITE® HHD 3582</th>
<th>LOCTITE® HHD 3583</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonding Performance**</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Fast Curing</td>
<td>Fast</td>
<td>Ultra Fast</td>
<td>Ultra Fast</td>
<td>Ultra Fast</td>
</tr>
<tr>
<td>Bondline Control</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Overflow Control</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Thickness Control</td>
<td>Thinner</td>
<td>Thinner</td>
<td>Thinner</td>
<td>Thinner</td>
</tr>
<tr>
<td>Open Time</td>
<td>Standard</td>
<td>UV Control</td>
<td>UV Control</td>
<td>UV Control</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Equipment Needs</td>
<td>Many Clamps</td>
<td>UV Lamp</td>
<td>UV Lamp</td>
<td>UV Lamp</td>
</tr>
<tr>
<td>Appearance</td>
<td>Yellow</td>
<td>Yellow</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Spring, 30 mil</td>
<td>White</td>
<td>Orange</td>
<td>Orange</td>
<td>Orange</td>
</tr>
<tr>
<td>Viscosity (cps, at 100°C)</td>
<td>4,000 - 5,000</td>
<td>4,000 - 7,000</td>
<td>3,500 - 7,000</td>
<td>3,500 - 7,000</td>
</tr>
<tr>
<td>Open Time** (minutes)</td>
<td>2 - 4</td>
<td>2 - 4</td>
<td>2 - 4</td>
<td>2 - 4</td>
</tr>
</tbody>
</table>

**Properties Comparison**

- **LOCTITE® 3580 vs. LOCTITE® 3581 vs. LOCTITE® HHD 3582 vs. LOCTITE® HHD 3583**

**Epoxy Adhesives**

- No small molecular generation during curing
- Strong, stable polymer network structure
- Low curing shrinkage
- Very good physical property
- Excellent reliability performance
- Highest level structural bonding

**NEW**

**LOCTITE® HHD 4274 Structural Adhesive**

- Low viscosity
- Very long work life
- High bonding strength
- Halogen-free
- Low-temperature curing
- Good aging performance

**Work Life - Viscosity**

**Work Life - Flow Rate**

**Lap Shear Strength**

**Aging Performance**

- Decline after aging
- Retention after aging

**Typical Applications**

- The 2-part heating cured epoxy adhesive, is particularly suitable in the assembly of magnetic materials used in speakers and receivers.

**Typical Applications**

- SS + SS
- AnAl + AnAl
- Zinc Coating Steel + Zinc Coating Steel
- PC + PC
Polyurethane Adhesives

- Bond a wide variety of materials, including most metals, plastics and composites
- Exhibit superior moisture and humidity resistance, as well as good toughness and flexibility

2-Part Polyurethane Adhesives

- Low warpages
- High temperature / humidity performance
- Fast fixture
- Superior flexibility
- Excellent impact & shear strength
- Halogen free

Cyanoacrylate Adhesives

- One-component, no-mix products that cure rapidly at room temperature without heat or light — exceptionally easy to use
- Excellent bond strengths to the widest range of plastics, rubbers and metals
- Widest selection of products

LOCTITE® HHD 6006 Structural Adhesive

LOCTITE® HHD 6006 is a high viscosity, 2-part urethane designed for sag resistance, low modulus and high impact resistance. Once mixed, it cures at room temperature or can be accelerated by heat.

<table>
<thead>
<tr>
<th>TYPICAL APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealing of housings, bond &amp; seal frames, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LIGHT SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
</tr>
<tr>
<td>LOCTITE® HHD 6006</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® HFF6005</th>
<th>LOCTITE® HHD 6006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mix Ratio</td>
<td>A : B</td>
<td>1 : 2</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Part A: 200 - 300</td>
<td>Part A: 16,625 - 17,600</td>
</tr>
<tr>
<td>Part B: 50,000 - 205,000</td>
<td>Part B: 18,000 - 55,000</td>
<td></td>
</tr>
<tr>
<td>Working Time</td>
<td>4 minutes</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Curing Condition</td>
<td>Room temperature to 80°C</td>
<td>Room temperature to 80°C</td>
</tr>
<tr>
<td>Lap Shear Strength (Polyamide, psi)</td>
<td>7500</td>
<td>&gt; 800</td>
</tr>
<tr>
<td>Side Impact (Polyamide, J)</td>
<td>9.2</td>
<td>9.2</td>
</tr>
</tbody>
</table>

| Storage Temperature | 21°C to 28°C | 21°C to 28°C |

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>LOCTITE® HFF6005</th>
<th>LOCTITE® HHD 6006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Cure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toughened</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Odor / Low Bloom</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCTITE® Product</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF602</td>
<td></td>
</tr>
<tr>
<td>HF4305</td>
<td></td>
</tr>
<tr>
<td>HF4307</td>
<td></td>
</tr>
<tr>
<td>HF435</td>
<td></td>
</tr>
<tr>
<td>HF438</td>
<td></td>
</tr>
<tr>
<td>HF460</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEW LOCTITE® Halogen-Free* Instant Adhesives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henkel’s LOCTITE® range of halogen-free cyanoacrylates minimizes health and environmental concerns via chlorine- and bromine-reduced formulas.</td>
</tr>
</tbody>
</table>

* Based on IEC 61249-2-21 Definition
900 ppm maximum chlorine | 900 ppm maximum bromine | 1,500 ppm maximum total halogens

<table>
<thead>
<tr>
<th>Properties Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARACTERISTICS</td>
</tr>
<tr>
<td>LOCTITE® Product</td>
</tr>
<tr>
<td>Mix Ratio A : B</td>
</tr>
<tr>
<td>Viscosity Part A</td>
</tr>
<tr>
<td>Part B: 50,000 - 205,000</td>
</tr>
<tr>
<td>Part B: 18,000 - 55,000</td>
</tr>
<tr>
<td>Working Time</td>
</tr>
<tr>
<td>Curing Condition</td>
</tr>
<tr>
<td>Lap Shear Strength</td>
</tr>
<tr>
<td>Storage Temperature</td>
</tr>
</tbody>
</table>

| * In combination with LOCTITE® 712 or 7452 Accelerator |
| Legend | Very good | VP Good |

Products designed specifically to meet the halogen-free standards.

Products whose halogen content has not been tested on a batch to batch basis. As batch variations exist, some batches may therefore exceed the specified limit as set out under Halogen Free Definition. Henkel shall not be liable for any and all consequences (direct or consequential) resulting from (i) the absence of test with regard to the halogen content or (ii) the products halogen content exceeding the specified limits or (iii) batch to batch variations of the product. Henkel offers halogen content certified batches on request.

Please note: A complete line of surface primers, accelerators and cleaners is available to further enhance the performance of LOCTITE® instant adhesives.
Light Cure Adhesives

- One-component, no-mix products that cure extremely fast for immediate QC in high-volume assembly operations
- Excellent bond strength to plastics and glass
- Bond-on-demand capability for unlimited repositioning

Liquid Optically Clear Adhesives

Henkel provides the total solution for Liquid Optically Clear Adhesives (LOCA), mainly from light cure adhesive technologies. Henkel offers leading LOCA technology from acrylate to silicone in its development pipeline and total application support with leading equipment process knowledge.

- Improving the viewing experience
- Increasing display ruggedness
- Extending display life
- Extending display product life
- Enabling thinner designs

TECHNOMELT® Molding

TECHNOMELT® molding offers a gentle encapsulation process with adhesive molding compounds to achieve the ultimate seal and robust “molded-on protection”

- Replaces both the housing and potting in one operation
- Shorter cycle times (15 - 45 seconds) and reduced number of operations
- Reduced molding material consumption
- Complete sealing of the components, providing watertight encapsulation
- Effective strain relief and environmental resistance
- Safe encapsulation of fragile components

Overmolding

LOCTITE® overmolding products are 1-component polyurethane primers used to enhance adhesion between multiple substrates during the co-molding or insert molding process

- The method replaces traditional assembly process to achieve a more compact, light, seamless and elegant design
- LOCTITE® overmolding products can help to increase the adhesion strength of the injected material to the parts surface

TYPICAL APPLICATIONS

- Bond non-opaque materials such as glass and plastic
- Bond non-opaque materials such as glass and plastic
- Bond non-opaque materials such as glass and plastic
- Bond non-opaque materials such as glass and plastic
- Bond non-opaque materials such as glass and plastic
- Bond non-opaque materials such as glass and plastic

TYPICAL APPLICATIONS

- Molding battery leads and molding connection housings
- Molding battery leads and molding connection housings
- Molding battery leads and molding connection housings
- Molding battery leads and molding connection housings
- Molding battery leads and molding connection housings
- Molding battery leads and molding connection housings
LOCTITE® 50 ML DUAL CARTRIDGE DISPENSE SYSTEM

- The interchangeable cartridge pushers with common mounting tooling can accommodate A System and B System 50 ml cartridges
- Independent cartridge pressure and actuation functions to control adhesive flow rate
- Fluid components designed for MMA and Epoxy adhesives, but can be used with any chemistry
- Accepts patented pending precision anti-drip dispense valve 144439 (sold separately)
- Easy cartridge changeover
- Lightweight design; able to be used on any LOCTITE® Precision Adhesive Dispensing Robot system
- Dispenses adhesives up to 200,000 cP viscosity

LOCTITE® 30 ML PUR HOTMELT DISPENSE SYSTEM

- Controller has two individual temperature output channels designed to control the LOCTITE® PUR 30 ml Dispense Head and PUR Pre-Heater for 30 ml syringes
- Integrated dispense time control, pressure control, and temperature control features are all in one easy-to-use system
- Easily integrated with a LOCTITE® Robot System
- Digital display temperature controller and timer
- Easy syringe changeover design
- PTFE safety enclosure
- Pre-heater reduces time required for syringe changeover

LOCTITE® 400 ML / 490 ML DUAL CARTRIDGE DISPENSE SYSTEM

- System process monitoring
- Volumetrically controlled adhesive dispensing
- No-drip stop and start dispense control
- Variable ratio capability
- High-output production capability
- Minimal downtime for package changeover and fluid system maintenance
- Slim design maximizes floor space utilization

LOCTITE® EQ VA35 HOTMELT JET SYSTEM

- The VA35 Hotmelt Jet Valve is designed for the contactless dispensing of highly viscous hotmelt and other highly viscous, high temperature materials for a variety of applications in the electronics, industrial, semiconductor, and handheld devices markets. To ensure best product compatibility, the fluid path is made from stainless steel. Due to extremely short triggering intervals ( < 2 ms) it is possible to accurately apply smallest amounts of such materials over distances from 2 to 200 µl. The volume of a single shot can be set from 1 to 200 µl. Thus, depending on the material, dot sizes from a minimum of 300 µm to a maximum of 2000 µm can be reached without contamination of the surface. It can apply multiple drops per location at a speed up to 150 drops/second. The separation of the fluidic part from the actuator part as well as a longer tappet ensures protection of the valve system and a considerably safe operation.
- Up to 150 drops/second
- Up to 300 drops/second
- Robust internal components for long life
- Modular nozzle
- Modular heater with separate heater controls for nozzle and 30 ml product reservoir

LOCTITE® EQ VA30 JET SYSTEM

- The VA30 Jet Valve is designed for the contactless dispensing of highly viscous hotmelt and other highly viscous, high temperature materials for a variety of applications in the electronics, industrial, semiconductor, and handheld devices markets. It is unlike any other jet on the market because only our jet dispensing product employs a unique diaphragm technology. Hard-to-dispense fluids can be dispensed reliably in volumes as small as 10 nanoliters. The VA30 Jet Valve is extremely fast and can dispense on the fly. It can apply multiple drops per location at a speed up to 300 drops/second. The drops can be dispensed into areas with clearance as small as 300 µm without contamination of the surface. The VA30 Jet Valve is suited for dispensing a wide range of fluids for a variety of applications. To ensure best product compatibility, the fluid path is made from ceramics and stainless steel and the diaphragm made of a highly fluorinated elastomeric material.
- Up to 300 drops/second
- Drops as small as 0.01 µl
- No fluid seals to clean or replace
- Field repairable, not necessary to return to factory for rebuild or repair
- Integral heater with minimal fluid heated
- Tungsten carbide internal components for long life

COMPACT ROTOR DISPENSING SYSTEM

- Volumetric device, flow rate proportional to speed, electronically controlled
- Dispenses anaerobics, acrylics and light cure acrylics
- Applications include drop or bead dispensing or potting
- Integrated Luer lock adapter with O-ring (patented) ensures sealing in reverse flow
- Because of the reversible direction of flow (back-to-back), and exact stop of the product flow can be achieved

Application Data

- Complete with Adhesive LOCTITE® Light Cure Adhesives (氰基丙烯酸酯), Activators, Primers
- Complete with Adhesive LOCTITE® Light Cure Adhesives (氰基丙烯酸酯), Adhesive, Primers
- Complete with Adhesive LOCTITE® Light Cure Adhesives (氰基丙烯酸酯), Adhesive, Antioxidant
- Application is dependent upon the characteristics of the fluid and the requirements of the application
- Application data is intended to be used as a starting point for system optimization
- Application data is intended to be used as a starting point for system optimization
- Application data is intended to be used as a starting point for system optimization

Adhesives and Sealants for Handheld Devices and Displays | 30
## Dispensing Equipment Selector Guide

### Dispense Systems — Adhesive Bottles

<table>
<thead>
<tr>
<th>LOCTITE® Product</th>
<th>Item Number</th>
<th>Pressure Regulation</th>
<th>Used to Dispense</th>
<th>Package Types &amp; Sizes</th>
<th>Viscosity Range</th>
<th>Low Level Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCTITE® Pneumatic Bottle Dispensers</td>
<td>97544</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>1 cc syringe or 200 g squeeze tube</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
<tr>
<td>LOCTITE® Integrated Semi-automatic Dispenser</td>
<td>97513</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>1 cc syringe or 200 g squeeze tube</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Dispense Systems — Pneumatic Syringe Dispensing

<table>
<thead>
<tr>
<th>LOCTITE® Product</th>
<th>Item Number</th>
<th>Dispense Patterns</th>
<th>Used to Dispense</th>
<th>Package Types &amp; Sizes</th>
<th>Viscosity Range</th>
<th>Vacuum Back- strokeWidth Back-Friction</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCTITE® Digital Syringe Dispenser</td>
<td>98013</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Microdots</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
<tr>
<td>LOCTITE® EQ VA10 Micro Diaphragm Stationary Applicator</td>
<td>97113</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Drops, Dots, Beads</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
<tr>
<td>LOCTITE® EQ SD10 Syringe Dispensing Systems</td>
<td>97114</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Light Cure Acrylics</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
<tr>
<td>LOCTITE® Light Cure Acrylics</td>
<td>97115</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Gel Adhesives</td>
<td>Low to Medium</td>
<td>No</td>
</tr>
<tr>
<td>LOCTITE® Light Cure Acrylics</td>
<td>97116</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Gel Adhesives</td>
<td>Low to Medium</td>
<td>No</td>
</tr>
<tr>
<td>LOCTITE® Light Cure Acrylics</td>
<td>97117</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Light Cure Acrylics</td>
<td>Low to Medium</td>
<td>No</td>
</tr>
<tr>
<td>LOCTITE® Light Cure Acrylics</td>
<td>97118</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Light Cure Acrylics</td>
<td>Low to Medium</td>
<td>No</td>
</tr>
</tbody>
</table>

### Dispensing Valves

<table>
<thead>
<tr>
<th>LOCTITE® Product</th>
<th>Item Number</th>
<th>Viscosity Range</th>
<th>Dispense Patterns</th>
<th>Used to Dispense</th>
<th>Stroke Adjustment</th>
<th>Back-Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCTITE® Stationary Dispenser Valve</td>
<td>97547</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Drops, Dots, Beads</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>LOCTITE® Hose Handle Valve</td>
<td>97548</td>
<td>N/A</td>
<td>Instant Adhesives</td>
<td>Drops, Dots, Beads</td>
<td>Low to Medium</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Dispensing Equipment Selector Guide

### LOCTITE® C110 Curing System

<table>
<thead>
<tr>
<th>Curing Spectrum</th>
<th>Spot Diameter</th>
<th>Curing Distance</th>
<th>Curing Intensity</th>
<th>Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV-A</td>
<td>3 - 20 mm</td>
<td>3 - 20 mm</td>
<td>3,000 - 4,000 mW/cm²</td>
<td>3 m</td>
</tr>
<tr>
<td>UV-B</td>
<td>3.5 - 20 mm</td>
<td>3.5 - 20 mm</td>
<td>3,000 - 4,000 mW/cm²</td>
<td>3 m</td>
</tr>
</tbody>
</table>

### LOCTITE® LED Flood System

<table>
<thead>
<tr>
<th>Curing Spectrum</th>
<th>Curing Area</th>
<th>Curing Distance</th>
<th>Curing Intensity</th>
<th>Edge-to-Edge</th>
<th>Daily Cycle</th>
<th>Integration</th>
<th>Controller</th>
<th>Advanced Internal Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV-A</td>
<td>3.5 - 20 mm</td>
<td>3.5 - 20 mm</td>
<td>3,000 - 4,000 mW/cm²</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### LOCTITE® LED Line Array System

<table>
<thead>
<tr>
<th>Curing Spectrum</th>
<th>Curing Area</th>
<th>Curing Distance</th>
<th>Curing Intensity</th>
<th>Edge-to-Edge</th>
<th>Daily Cycle</th>
<th>Integration</th>
<th>Controller</th>
<th>Advanced Internal Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV-A</td>
<td>3.5 - 20 mm</td>
<td>3.5 - 20 mm</td>
<td>3,000 - 4,000 mW/cm²</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### LOCTITE® CureJet LED System

<table>
<thead>
<tr>
<th>Curing Spectrum</th>
<th>Curing Area</th>
<th>Curing Distance</th>
<th>Curing Intensity</th>
<th>Edge-to-Edge</th>
<th>Daily Cycle</th>
<th>Integration</th>
<th>Controller</th>
<th>Advanced Internal Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV-A</td>
<td>3.5 - 20 mm</td>
<td>3.5 - 20 mm</td>
<td>3,000 - 4,000 mW/cm²</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notes:**
- Dispensing equipment selection depends on industry-specific needs and applications.
- For detailed specifications and further information, please visit [loctiteequipment.com](http://loctiteequipment.com).

---

**Asia Pacific**
www.loctiteequipment.com

**North America**
www.equipment.loctite.com
<table>
<thead>
<tr>
<th>Product</th>
<th>Category</th>
<th>Application</th>
<th>Viscosity</th>
<th>Fixation Time</th>
<th>Shear Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>345</td>
<td>Acrylate</td>
<td>Clear Gel</td>
<td>55,000</td>
<td>10 seconds</td>
<td>3,680 (25.4) on Steel</td>
</tr>
<tr>
<td>3212</td>
<td>Epoxy</td>
<td>Straw Liquid</td>
<td>30,800</td>
<td>30 minutes @ 302</td>
<td>2,230 (15.4) on Galvanized Steel</td>
</tr>
<tr>
<td>HF368 / SF 7888</td>
<td>Acrylate</td>
<td>Clear Gel</td>
<td>65,000</td>
<td>15 seconds</td>
<td>3,680 (25.4) on Steel</td>
</tr>
<tr>
<td>HF8630</td>
<td>Methyl Methacrylate</td>
<td>Light Blue</td>
<td>2 : 1 Part A: 11,000 - 22,000 Part B: 10,000 - 20,000</td>
<td>5 - 10 minutes</td>
<td>2,030 (14.0) on Al</td>
</tr>
<tr>
<td>Hysol E-20HP</td>
<td>Epoxy</td>
<td>Off White</td>
<td>30,000</td>
<td>&gt; 120 minutes</td>
<td>3,270 (22.5) on Grit-Blasted Steel</td>
</tr>
<tr>
<td>HF8150R</td>
<td>Methyl Methacrylate</td>
<td>Green</td>
<td>10 : 1 Part A: 35,000 - 65,000 Part B: 5,000 - 20,000</td>
<td>5 - 10 minutes</td>
<td>3,100 (21.4) on Al</td>
</tr>
<tr>
<td>HF435</td>
<td>Cyanoacrylate</td>
<td>Clear</td>
<td>200</td>
<td>30 seconds</td>
<td>2,700 (18.6) on Steel</td>
</tr>
<tr>
<td>HF438</td>
<td>Cyanoacrylate</td>
<td>Black</td>
<td>200</td>
<td>30 seconds</td>
<td>2,800 (19.3) on Steel</td>
</tr>
<tr>
<td>HF480</td>
<td>Cyanoacrylate</td>
<td>Black</td>
<td>200</td>
<td>90 seconds</td>
<td>3,800 (26.2) on Steel</td>
</tr>
<tr>
<td>HF4305</td>
<td>Light Cure Cyanoacrylate</td>
<td>Clear to Pale Green</td>
<td>900</td>
<td>&lt; 5 seconds</td>
<td>2,050 (14.1) on PC</td>
</tr>
<tr>
<td>3192</td>
<td>Acrylic</td>
<td>UV / Heat (80ºC / 1 hour)</td>
<td>4,000</td>
<td>4,000 - 5,000</td>
<td>56 83 100% 1.49 &gt; 99 3.00</td>
</tr>
<tr>
<td>3195</td>
<td>Acrylic</td>
<td>UV</td>
<td>3,000</td>
<td>3,000 - 4,000</td>
<td>22 42 250% 1.51 &gt; 99 1.56</td>
</tr>
<tr>
<td>3196</td>
<td>Acrylic</td>
<td>UV</td>
<td>3,000</td>
<td>3,200 - 4,200</td>
<td>11 17 300% 1.51 &gt; 99 1.39</td>
</tr>
<tr>
<td>3195DM</td>
<td>Acrylic</td>
<td>UV</td>
<td>3,000</td>
<td>30,000 - 40,000</td>
<td>60 150 150% 1.51 &gt; 99 1.30</td>
</tr>
<tr>
<td>5192DM</td>
<td>Silicone</td>
<td>UV</td>
<td>5,000</td>
<td>40,000 - 60,000</td>
<td>42 47 150% 1.41 &gt; 99 0.40</td>
</tr>
<tr>
<td>3214</td>
<td>Acrylic</td>
<td>UV</td>
<td>8,000</td>
<td>3,100 - 5,000</td>
<td>64 230 100% 1.49 &gt; 98 1.95</td>
</tr>
<tr>
<td>3215</td>
<td>Acrylic</td>
<td>UV</td>
<td>8,000</td>
<td>10,500 - 15,500</td>
<td>68 265 100% 1.50 &gt; 98 1.75</td>
</tr>
</tbody>
</table>
Wearable Technology Devices

APLICATIONS

<table>
<thead>
<tr>
<th>Domain Category</th>
<th>Device Type</th>
<th>Applications</th>
<th>Henkel Solution</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness and Wellness</td>
<td>Activity Tracker</td>
<td>Low Surface Energy</td>
<td>LOCTITE® UV Pre Activated PUR Hotmelt Adhesive</td>
<td>Good bonding performance on thin (flexible bond substrate) water proof</td>
</tr>
<tr>
<td>Fitness and Wellness</td>
<td>Activity Tracker</td>
<td>Light Cure</td>
<td>LOCTITE® UV Pre Activated PUR Hotmelt Adhesive</td>
<td>High tack strength to PC / Flexible back sheet / Fast Fusion time (2 min)</td>
</tr>
<tr>
<td>Fitness and Wellness</td>
<td>Activity Tracker</td>
<td>FL + Metal (Rolling &amp; Gap Filling)</td>
<td>LOCTITE® Light Cure (Spin-Curable) Adhesive</td>
<td>Custom Bonding with flexible film to bond line transparency</td>
</tr>
</tbody>
</table>

Adhesives and Sealants for Handheld Devices and Displays | 3937

Collaborative Innovation

- Enhancing the customer’s experience with innovative services and solutions
- Extending to new applications with collaborative innovation
- Technical Service / On-Site Support
- Sustainable Innovations
- Business Function
- Product Safety / Regulatory Affairs
- Product Technology
- Product Development
- Advanced molecular biological methods
- Henkel's Corporate Toxicology group provides products and materials considering the intended application at our customer and also the use of the final product. Our certified toxicologists have access to a comprehensive toxicological archive containing data collected on behalf of Rohm and Haas. Thus, we are able to provide detailed information to guide our customers in their own risk assessment. If health-related questions arise concerning our products we are happy to contribute our toxicological expertise - if necessary at the customer's site.

Henkel's center for dermato logical product support carries out in vitro and in vivo dermatological tests for medicinal products. With our expertise in dermatology and a broad spectrum of ultra-modern technologies for in vitro and in vivo analyses we assess raw materials and products for skin compatibility and efficacy.

In vivo and in vitro studies can be carried out to test the efficacy of new products and materials. Henkel offers a range of tests to assess skin compatibility, including evaluations of irritancy, sensitization, phototoxicity, and photostability. These tests help ensure that products are safe for human use, both in terms of their composition and their interactions with skin and other tissues.

Additionally, Henkel provides technical support to help customers understand the benefits and limitations of their products. This includes detailed information on how to use products correctly and safely, as well as guidelines for storage and handling.

Henkel is committed to providing customers with products and services that meet the highest standards of quality and safety. This includes a focus on reducing the environmental impact of our products, as well as ongoing research and development to improve their performance and sustainability.

Henkel's expertise in dermato logical product support includes expertise in testing and evaluation, as well as training and education for customers. This helps ensure that customers are able to use our products in the most effective and safe way possible, and also helps them stay up-to-date with the latest developments in the field.

Adhesives and Sealants for Handheld Devices and Displays | 3938

More Than Just A Product

Advanced molecular biological methods are used to thoroughly investigate new materials and products, ensuring that the formulation for each product is optimized for performance and safety. Henkel's Corporate Toxicology group provides products and materials considering the intended application at our customer and also the use of the final product. Our certified toxicologists have access to a comprehensive toxicological archive containing data collected on behalf of Rohm and Haas. Thus, we are able to provide detailed information to guide our customers in their own risk assessment. If health-related questions arise concerning our products we are happy to contribute our toxicological expertise - if necessary at the customer's site.

In vivo and in vitro studies can be carried out to test the efficacy of new products and materials. Henkel offers a range of tests to assess skin compatibility, including evaluations of irritancy, sensitization, phototoxicity, and photostability. These tests help ensure that products are safe for human use, both in terms of their composition and their interactions with skin and other tissues.

Additionally, Henkel provides technical support to help customers understand the benefits and limitations of their products. This includes detailed information on how to use products correctly and safely, as well as guidelines for storage and handling.

Henkel is committed to providing customers with products and services that meet the highest standards of quality and safety. This includes a focus on reducing the environmental impact of our products, as well as ongoing research and development to improve their performance and sustainability.

Henkel's expertise in dermato logical product support includes expertise in testing and evaluation, as well as training and education for customers. This helps ensure that customers are able to use our products in the most effective and safe way possible, and also helps them stay up-to-date with the latest developments in the field.

Adhesives and Sealants for Handheld Devices and Displays | 3938
The World of Henkel

Unsurpassed Industry Know-How
Empowering customers to improve
- Development, engineering and field support
- Depth of industry know-how
- Technology expertise

Engineering Service
Henkel offers complete engineering services for projects demanding expertise and support beyond the limits of standard technical services. Our engineers provide the following value-added services.
- On-site engineering assistance and consultation
- Joint product development programs
- Contract lab services and testing
- Prototype testing
- Custom formulations

Depth of Knowledge
Solutions to solve design challenges
- Understanding of applications and processes
- Close collaboration
- Anticipated needs

Limitless Opportunities
Enabling the experience
- Technology and brand leader
- Enabling new design
- High value specialty solutions
- Most comprehensive portfolio

Training Service — Henkel Technology Day
Two- to four-hour seminar providing solutions to handheld devices and displays manufacturers on design and assembly challenges. It is designed specifically for material, manufacturing and design engineers.
- Reviews in detail how using adhesives and sealants can improve quality and increase production
- Touches on the wide array of LOCTITE® product solutions including adhesives and sealants, dispensing and curing equipment
- Includes hands-on demonstrations and real-world case histories

Learn how today's advances in adhesive technology will help you cut product costs and improve product quality.

We invite you to
Experience • Learn • Discover
the world of Henkel’s LOCTITE® products.

Innovation is at your fingertips.
Henkel products are designed to meet the specifications and testing standards of a variety of agencies. Because such standards change or may be modified, no warranty is given regarding such compliance. The information provided may be used as a quick reference tool to aid in design or application. For up-to-the-minute information on agency approvals, or to inquire about additional agency approvals, please contact the Henkel Product Management team or your local Henkel Technical Support team.

Contact us at: www.loctite.com/hhdd

All marks used in this brochure are trademarks and/or registered trademarks of Henkel and its affiliates in the U.S., Germany and elsewhere.

© 2014 Henkel Corporation. All rights reserved. APH-AG-146 (06/2014)

GLOBAL HEADQUARTERS
Henkel AG & Co. KGaA
Henkelstraße 67
40191 Düsseldorf
Germany
Phone: +49 211 797 0
Fax: +49 211 798 4008

REGIONAL CENTERS
Henkel Asia-Pacific & China Headquarters
928 Zhangheng Road
Zhangjiang High-Tech Park
Pudong New District
Shanghai 201203, P.R.China
Tel: +86 21 2891 8000
Fax: +86 21 2891 8971

Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067
United States
Tel: +1 860 571 5100
Fax: +1 860 571 5465

Henkel Brazil
Av. Prof. Vernon Krieble, 91
06690-250 Itapevi, São Paulo
Brazil
Tel: +55 11 4143 7000

Henkel Jebel Ali Fzco.
Silicon Oasis
Block F, 4th floor
Dubai
United Arab Emirates
Tel: +971 4 389 3333

Henkel Central Eastern Europe GmbH
Erdbergstraße 29
1030 Wien
Austria
Tel: +43 1 711 0 40
Fax: +43 1 711 042 523

ASIA-PACIFIC
Henkel Japan Ltd.
27-7 Shin Isogo-cho
Isogo-ku, Yokohama-shi
Kanagawa 235-0017, Japan
Tel: +81 45 758 1800
Fax: +81 45 758 1851

Henkel Korea Ltd.
418 Mapo-dong, Mapo-gu
Seoul 121-734
South Korea
Tel: +82 2 3279 1700
Fax: +82 2 3273 4663

Henkel (Malaysia) Sdn. Bhd.
46/F, Menara Telekom
Jalan Pantai Bahru
Kuala Lumpur 59200
Malaysia
Tel: +60 3 2246 1000
Fax: +60 3 2246 1188

Henkel Singapore Pte Ltd.
#03-01/02 Haw Par Technocentre
401 Commonwealth Drive
Singapore 149598
Tel: +65 6266 0100
Fax: +65 6266 1161

Henkel Taiwan Ltd.
10/F, 866 Zhongzheng Road
Zhonghe District
New Taipei City 23568
Taiwan
Tel: +886 2 2227 1988
Fax: +886 2 2226 8699

Henkel (Thailand) Ltd.
35/F, Centralworld Tower
999/9 Rama 1 Road
Pathumwan
Bangkok 10330
Thailand
Tel: +66 2 209 8000
Fax: +66 2 209 8008

All marks used in this brochure are trademarks and/or registered trademarks of Henkel and its affiliates in the U.S., Germany and elsewhere. © 2014 Henkel Corporation. All rights reserved. APH-AG-146 (06/2014)