

TECHNICAL GUIDANCE LABEL & ADHESIVE



**Developed by the Technical Committee to the
Standard Mould Bottle Agreement**

August 2011

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PURPOSE

This document, developed by the Technical Committee to the Standard Mould Bottle Agreement (Agreement), is intended to provide Signatories with a tool for discussions with label and adhesive suppliers. These specifications are known to result in label drop-off and pulping times that comply with the Technical Section to the Agreement (See Appendix E of the October 2009 Technical Section to the Agreement – copied herein for convenience).

CONFORMANCE

All packaging materials shall conform to the following requirements:

- 1) All packaging shall be in compliance with the applicable provisions of the Canadian Food and Drugs Act and meet the requirements of the Canadian Food Inspection Agency;
- 2) All packaging materials and packaging components must be free of added heavy metals. Suppliers and/or co-packers shall furnish a Heavy Metals Warranty for any packaging materials supplied or used for packaging;
- 3) Supplier shall provide notification of any packaging that contains post-consumer usage recycled materials. The supplier is responsible for ascertaining the migration of, and food additive status of, any component of the recycled materials;
- 4) Supplier will furnish, upon request, all technical bulletins, MSDS, regulatory approvals for all materials and components utilized in the construction, processing, and/or printing of packaging materials;
- 5) Supplier will use standard test procedures, sanctioned by established industry associations for determining material performance and properties. Any non-sanctioned test procedure will be furnished upon request;
- 6) Good Manufacturing Procedures must be used in the manufacture and distribution of all packaging materials;
- 7) Supplier shall provide notification of any proposed change to an approved container, packaging or shipping material. Any change must be verified for acceptable performance before the change is implemented.

CONSTRUCTION

- 1) Only substrates approved under Company Name specifications can be used;
- 2) Dimensions and their tolerances are stated under Company Name specification or stated elsewhere in this General Specification. All dimensions, where variation can occur and cause operational quality or appearance issues, must be within prescribed tolerance bands.

3) Labels shall meet the following criteria:

- **Curl** – Labels should not exhibit curl greater than ¼” to the front or back side. Labels shall not exhibit curl that would adversely affect the labeling application;
- **Blocking or Edge weld** – Labels should be free of nicks or burrs, which can cause blocking or edge welding. If there is some slight blocking, a quick fan of the bundle should release it;
- **Caustic Drop Off** – Target drop off time of 2.5 minutes. Minimum 1 minute and maximum 4 minutes. Labels must pulp within 20 minutes;
- **Pick Resistance** – metallized substrates must have sufficient pick resistance to withstand packaging lines and distribution system and to reach the consumer undamaged;
- **Scuff Resistance** – label must survive a minimum of 500 cycles on a Sutherland Rub machine using a 4lb weight without any scuffing or streaking of inks;
- **Embossing** - All labels shall be overall embossed with a C-3 (Broken Line Pattern) as specified by Company Name. Embossing to the point of cutting through the label or heavy embossing, which creates tearing during labeling, will not be tolerated. Likewise, embossing that is too light, to the point that the labels are flagging during labeling, will not be tolerated;
- **Metallized** – Bright Finish, Non-Flaking;
- **C.O.F.** – All labels must have a C.O.F. within – KIN .16 to .32;
- **Grain Direction** – All printing shall be in the machine direction of the paper, i.e.,
 - the grain of the label shall be parallel to the base of the bottle unless specifically requested by the customer;
- **Cutting** - All labels shall be cut sharp. Free from frayed edges and blocking and within dimensional tolerances specified in individual specifications (+/- 1/64"). This tolerance shall apply to labels within bundles and within an order;
- **Size** – Size tolerance is +/- .015” for guillotine cut labels. It is +/- .010” for die cut labels;
- **Substrate** - Only substrates approved by Company Name can be used.

PRINTING

- 1) The labels should have correct copy and color as approved by Company Name;
- 2) The printing shall be centered, in proper register, and sharp and clear throughout;
- 3) The labels must be printed in the printing process type approved by Company Name;
- 4) UPC must be scannable and meet industry standards as laid out by the Uniform Code Council www.uc-council.org. Zero tolerance on any type of UPC defect;
- 5) Labels are to be printed on approved substrates as agreed to by Company Name;
- 6) All colours shall conform to Company Name Standards;
- 7) **Color to color** - registration tolerance for litho and gravure printed labels is .010”;
- 8) **Print-to-cut** – print to cut tolerance is +/- .032”;
- 9) **Collating Marks** - To be built into electronic files. Printer’s responsibility to achieve .3mm thick line on finished label. Square cut bodies & neck labels:
 - Parallel & Perpendicular to finished cut;
 - 2mm center to center from cut;
 - .3mm wide with a bleed of 1.5mm in and out on a square cut label.

DEFECT DEFINITIONS and EXAMPLES

The labels shall be virtually free from major and minor defects as described below

1) Label Major Defects:

Definition:

- Label defects with a potential to cause operational efficiency issues or down time.

Examples:

- Label size variation is greater than +/- .015”;
- Label drop off times do not meet specification limits;
- Label printed on incorrect substrate;
- Label with curl greater than ¼” to the front or back side;
- Label with blocking or edgeweld;
- Label embossing does not meet standard;
- C.O.F. does not meet standard;
- Grain direction does not meet specification.

2) Label Minor Defects:

Definition:

- Label defects with non-functional or cosmetic effect with a potential to cause consumer dissatisfaction but does not impact product safety, quality or operations efficiency.

Examples:

Color to color registration greater than +/- .010" ;

- Print to Cut registration greater than +/- .032";
- Incorrect copy;
- UPC incorrect, missing or unreadable;
- Missing ink in a critical area (i.e. directions, cautions, etc.);
- Wrong color;
- Upside-down printing;
- Label does not meet scuff-resistance specification;
- Label does not meet pick resistance specification;
- Label is slightly off color;
- Any scratches, streaks or print flaws visible when viewed at arm's length;
- Any consumer complaint type defect such as missing / blank / foreign / double / upside-down printing.

4) Line Performance:

Labels shall be robust enough to be applied in normal bottling line operations. Line efficiencies will not be adversely affected due to defects described in specifications. Failure to comply is reason for rejection.

RECORD RETENTION

The supplier is expected to exercise and document sufficient quality control to ensure labels comply with these specifications. The Supplier shall have data available upon request. Failure to meet the standards will result in rejection. The supplier should be prepared to resupply labels if necessary.

METHODS OF PACKING

Packaging Specifications:

- Labels are to be packed in bundles with the quantity per bundle meeting Company Name specifications;
- Each bundle should have brown chipboard on the bottom and, when used on top, chipboard should be a contrasting colour;

- Bundles should be banded with plastic or paper bands and then shrink wrapped with Clysar 50guage shrink film.
- Labels are to be packed upside down in the cartons.

LABEL SPECIFICATIONS

Label Type	Non-Metalized	Metallized
Resistance to Water	Semi-wet strength	Semi-wet strength
Recycle Content (%)	0	0
Coatings	Clay and binders	Metallized, acrylic primed
Basis Weight (gm/m2)	65 ± 3	60 ± 3
Basis Weight (lb / ream)	40 ± 2	37 ± 2
Caliper (mils)	2.5 ± 0.2	2.3 ± 0.2
Brightness (%)	84 ± 1	NA
Gloss 60 deg angle	75 ± 3 (Hunter Lab@75deg.)	60 ± 5 (Byk/Gardner @ 60 deg.)
Moisture (%)	4.3 ± 0.5	3.8 ± 0.5
Smoothness (PPS)	1.4 ± 0.3	1.0 ± 0.2
Shade ("b" value)	TBC	NA
Mullen (psi)	TBD	24 ± 9
Caustic Solubility	Caustic soluble	Caustic soluble
Cobb (backside) (gm/m2)	35 ± 8	36 ± 8
Gurley Stiffness MD (mg)	TBD	45 ± 5
Gurley Stiffness CD (mg)	TBD	22 ± 4
Opacity (dry) (%)	87.5 ± 1.5	NA
Opacity (wet) (%)	78 ± 1.5	NA
Tear MD (g)	TBD	28 ± 6
Tear CD (g)	TBD	38 ± 10
Tensile MD dry (lbs/in)	27 ± 4	24 ± 4
Tensile CD dry (lbs/in)	TBD	12 ± 4
Tensile MD wet (lbs/in)	3.03 ± 1	2.7 ± 1
Tensile CD wet (lbs/in)	TBD	1.4 ± 1
wet Strength (% wet/dry)	10	12
Wax Pick	NA	6 ± 1

ADHESIVE SPECIFICATIONS

Adhesive nature	Casein or Synthetic
Viscosity @ 22 degrees Celsius	65.000 ±
Ice proofness (hours)	> 72
Caustic drop-off (seconds)	150-240
Fiber tear (seconds)	< 12

ADHESIVES KNOWN TO COMPLY WITH DROP-OFF SPECIFICATIONS

Adhesive Manufacturer	Product Number	Casein or Synthetic	Website
Technical Adhesives Ltd.	422A	Casein	www.technicaladhesives.ca
Adtech	API-2110	Casein	www.adhesivetechnology.com
Adtech	API-2112	Casein	www.henkel.com
Henkel	42-421	Casein	www.henkel.com
Henkel	42-422	Casein	www.henkel.com
Henkel	14-055A	Casein	www.henkel.com
Henkel	14-155A	Casein	www.henkel.com
Henkel	14-422A	Casein	www.henkel.com
Henkel	14-421A	Casein	www.henkel.com
Henkel	LG-54	synthetic	www.henkel.com
Henkel	LG-45CH	Synthetic	www.henkel.com
Henkel	LG-45C	Synthetic	www.henkel.com

Standard Mould Bottle Agreement
Technical Section
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6.05 APPENDIX E, Label Drop-Off

a) Purpose:

All label and glue combinations applied to Standard Bottles must be removable under the following test procedure.

b) Test Specifications:

- i) 3.0% Caustic at 66 degrees Centigrade
- ii) Average drop-off target 2.5 minutes
- iii) Minimum drop-off 1.0 minutes
- iv) Maximum drop-off 4.0 minutes

c) Materials:

- i) Large Glass Beaker - Pyrex, capacity 4000ml, diameter 18cm, height 25cm, 1.5mm thick
- ii) Magnetic Stir Bar - octagonal shape, length 51mm, diameter 8mm
- iii) Metal Support Rod (1)- diameter 13mm, length 50cm
- iv) Clamps (2) - to be attached to the support rod
- v) Heat Source - chemical resistant immersion probe (or alternative heat source)\
- vi) Temperature control device for probe
- vii) Magnetic Stirrer - Fisher Magnetic Stirrer, 49 sq. in., 60-1200rpm, (Fisher Scientific catalogue no. 11-600-49S)
- viii) Sodium Hydroxide - pellets or beads, Certified ACS
- ix) Thermometer
- x) Tongs
- xi) Stopwatch/Timer

d) Equipment Set-up

- i) Place metal support rod into the slot in the back of the magnetic stirrer.
- ii) Place beaker on top of magnetic stirrer.
- iii) Situate the first clamp on the support rod so it is located just above the beaker.
- iv) Situate the second clamp higher on the rod. Place the heating element through the fingers of the clamp so it is situated at the side of the beaker and where it won't interfere with the bottle (see Figure 1.)
- v) Hang the thermometer from the support rod into the beaker.
- vi) figure 1



e) Method

- i) All samples tested must meet a minimum curing time of seven days at room temperature and 50% relative humidity.
- ii) Prepare caustic solution: 3.5 litres of 3.0% sodium hydroxide solution in beaker
- iii) 105 grams of NaOH pellets dissolved in 3.5 litres of water will yield a 3.0% solution. ***ALWAYS ADD PELLETS TO WATER - NEVER WATER TO PELLETS***

- iv) Place immersion heater into beaker and heat solution to 66°C.
- v) Place stirring rod in beaker and adjust setting on magnetic stirrer dial to 500 rpm.
- vi) Place the bottle to be tested into the bottom clamp and lower it carefully into the beaker. The bottle should be submerged above the area of label placement. The bottom of the bottle should be approximately 7cm from the bottom of the beaker. Ensure that the bottle does not make contact with the immersion heater. (see Figure 2) Immediately start the timer on stopwatch.
- vii) When the label falls completely off the bottle, stop the timer. This is the label drop-off time.
- viii) Figure 2



- ix) Remove the bottle from the caustic bath. Immediately after removal, in one swift motion, lower the bottle into a beaker of tepid (approximately 60 degrees C.) tap water until the shoulders of the bottle are submerged and then remove. Look for adhesive ghosting (adhesive remaining on the bottle in the label area). Perform a final water dip step to confirm adhesive ghosting.
- f) Pass criteria:
- i) Labels must drop-off within the test time period;
 - ii) Labels must not be full wet strength;
 - iii) Labels must pulp or break down;
 - iv) Labels must sink in caustic; and
 - v) Adhesives must not ghost.